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ABSTRACT

Research carried out on El Salvador's Educational Reform project in the first school year that used instructional television (February-November, 1969) is summarized in this report. Focusing on the 32 pilot classes using television, together with 16 other classes without television, chapters include the administrative history of the Reform, studies of student abilities and learning, cognitive growth, attitudes and aspirations, and teachers' understanding and acceptance of the new technology of television. (Author/SP)

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TELEVISION AND EDUCATIONAL REFORM IN EL SALVADOR

COMPLETE REPORT ON THE FIRST YEAR OF RESEARCH

EMILE G. McANANY
JOHN K. MAYO
ROBERT C. HORNIK

RESEARCH REPORT NO. 4

This is one of a series of reports of research on the Educational Reform Program of El Salvador, and especially its use of instructional television.
This report has been prepared by members of the Institute for Communication Research, Stanford University, on behalf of the Academy for Educational Development, under contract with the U.S. Agency for International Development.

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5. Measuring Educational Development through Classroom Interaction. Research Memorandum No. 1 September, 1969. By Wilbur Schramm.

6. Parents Talk about ETV in El Salvador. Research Memorandum No. 2. October, 1969. By Luis F. Valero Iglesias, Emile G. McAnany.

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July, 1970

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SUMMARY OF CONCLUSIONS

The work of research and evaluation of El Salvador's Educational Reform and instructional television project is reported in the subsequent chapters. The general conclusions from these chapters are summarized below:

I. Some general effects of the instructional television system

1. One of the most important long-range effects that the adoption of instructional television (ITV) seems to be having in El Salvador is the changes in other parts of the educational system that a thoroughgoing acceptance of the technology implies: i.e., curriculum revision, teacher retraining, new supervision, and evaluation systems. ITV has acted as a catalytic agent in educational reform and innovation.

2. The general effect of ITV on classroom learning may be seen as providing an alternative to the rote system where the teacher is the sole source of information, and learning consists of passive memorization; the ITV system provides various alternative information sources (television teacher, printed materials, group activities, experiments, and so forth) and forces the student to become more actively involved in processing information from these various sources. The result is more active participation and increased learning by the student.

II. Student learning and ability testing

3. There were large learning gains recorded in each of three ITV courses--mathematics, science, and social studies--tested by before-and-after measures. When comparisons were made on questions common to both the old and new curricula, television classes showed about a 20 per cent advantage over a sample of traditional classes on end-of-year tests in all three subject matters.

4. An attempt to control for the effects of television alone as compared to other reform factors (new curriculum, retrained teachers, printed guides, and workbooks) were inconclusive.

5. Learning from television does not show large differences for various subgroups within the school system. Everyone in ITV classes, whether rich or poor, from the city or the country, male or female, with high or low general ability, gained almost the same number of points on the end-of-year achievement tests in mathematics, science, and social studies. Fears that ITV would be non-egalitarian in its effects, that only the advantaged students would benefit from it, did not prove to be true.

6. General ability and reading tests, prepared for Spanish-speaking populations, were given to a large sample of Plan Basico students. Results showed that by the seventh grade students who are from the city, from better educated families, and males all do considerably better on such tests. These differences are related to socioeconomic factors, previous instruction in primary school, and cultural values, and do not reflect directly upon I.Q. How much ITV

may help change these relationships in the development of learning abilities will be studied over the next several years of follow-up tests.

III. Cognitive skills

7. In more general cognitive skills, such as flexible thinking and ability to classify and think abstractly, several groups of primary and Plan Basico students were tested. Results reveal large differences over different age groups but also between groups from different social and school backgrounds. Urban students at all age levels do the best on tests of such skills, followed by rural students, who lag far behind, while children of comparable ages with little or no schooling showed almost no sign of development over a seven-year age span. These were baseline measures that will be repeated and refined in order to test the effect of television instruction on this kind of cognitive development.

IV. Student attitudes and aspirations

8. Students in television classes had very favorable attitudes toward instructional television at the beginning of the school year; when measured at the end, they were even more favorable. Students without television were also favorable though less so than those in ITV classes. However, they too became slightly more favorable by the end of the year.

9. By seventh grade three-fourths of Plan Basico students in

the study sample already have more education than their parents and are aspiring to considerably more. Aspirations for more education and less strongly for professional occupations are related to factors of parents' education, sex, and especially to general ability and reading scores. A sample of students in their last year of Plan Basico (ninth grade) still manifest high aspirations to continue on to the university and to enter already crowded professions. A bottleneck at the university level, and frustration of high-aspiring secondary students are problems that face the educational system of El Salvador.

V. Dropouts and failures

10. Students in television classes had lower dropout and failure rates for the school year than did the sample of traditional classes. Attendance data were too unreliable in most cases to make estimates for either group.

VI. Teachers' attitudes and classroom interaction

11. Teachers using television in their classrooms showed very favorable attitudes toward television instruction at the beginning of the year and even more positive attitudes at the end. Two other teachers' groups in retraining, who had not yet used television, were more skeptical but still positive in their attitudes toward ITV.

12. Preliminary classroom observations, made to develop an observation form for new supervisors, indicate that classes under

the new system are likely to be visually more interesting and intellectually more challenging than old system classes.

VII. Administrative record

13. Historical and administrative records are being kept on the development of this project in the hope that these may be useful to other countries planning major changes in their educational systems, especially the use of instructional television. These must be interpreted with greater perspective than is now possible, but one conclusion that emerges strongly is the importance of planning and preparation before a new system gets under way. This project has roots reaching back three years before televised instruction began in the classroom. Another important aspect of planning and meeting objectives is the strong backing the project has received from the central government and the Ministry of Education.

Chapter One

INTRODUCTION: FOCUS OF THE REPORT

The present report[1] summarizes research carried out on El Salvador's Educational Reform project in the first school year that used instructional television (February-November, 1969). Much of the research is focused on the 32 pilot classes using television, together with 16 other classes without television, as well as with several teacher groups who were being retrained. Subsequent chapters will focus on the administrative history of the Reform, studies of student abilities and learning, cognitive growth, attitudes and aspirations, and teachers' understanding and acceptance of the new technology of television.

I. Background

El Salvador, the smallest continental country in the Western Hemisphere (21,393 square kilometers), is also the most densely

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[1]For two years Mrs. Ana Maria Merino de Manzano has contributed in a special way to the work reported in this volume, as well as to the project itself, both as research assistant in El Salvador and as a graduate student at Stanford University. We must also point out that much of the work involved in producing this and other research reports was carried out by our counterparts in the Evaluation Section of the Ministry of Education's ETV division. Since its beginning in 1968, this office has been under the direction of Lic. Luis Fernando Valero Iglesias. Our own office in San Salvador has contributed a great deal to this report through the assistance of Br. German Rodriguez, Sra. Nohemi de Ehrhardt and Sra. Maria Ester de Zamora.

populated. With population estimated at 3,151,000 in 1967, it had a density of 147 people per square kilometer. This is many times the density of all other of El Salvador's continental neighbors: for example, Mexico, 23, Ecuador, 19, Brazil, 10, Argentina, 8, Bolivia, 3. The estimated birth rate for 1963-67 of 3.7 per cent also led all Latin American countries.[1] With few natural resources and an estimated 95 per cent of its available land under cultivation, El Salvador must concentrate on improving its greatest resource -- its people -- if it is to achieve a proper development in the future.

The Educational Reform undertaken by the present government was a response to many serious problems that faced the school system in 1967. Further details will be given in Chapter two concerning the Reform, but briefly it is concerned with the following major points.[2]

1. Two main aims of Salvadoran education are:

   a. to give an integral formation of the personality of students, giving them a deep sense of human solidarity;

   b. to be a basic factor of social and economic development through an adequate, opportune, and efficient preparation of students.

2. The problems facing the Ministry of Education in 1967 were, among others, a disorganized Ministry spread through 20 scattered buildings in San Salvador; a curriculum that was overloaded with irrelevant material;

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[1] Information taken from Unesco Statistical Yearbook, 1968.

[2] This information is derived from ¿Que es la reforma educativa? Sus fines y sus programas (San Salvador, El Salvador: Dirreción de Publicaciones, Ministerio de Educación, 1969).

many unemployed graduates (2,000) of primary normal schools, and only 20 per cent of secondary teachers with adequate preparation; an antiquated supervision system; 70 per cent of schools having only one room; 80 per cent dropout rate in the six-year primary system.

3. To remedy these problems, the Ministry of Education proposed a Reform that would increase efficiency, raise quality, and promote increased enrollment in both primary and secondary in the following ways:

   Efficiency: (a) create a five-year educational plan, 1968-72 (cf. Chapter two); (b) reorganize the administration of the Ministry; (c) create a new system of supervision; (d) improve administration of the secondary division of the Ministry; (e) improve services in rural primary schools with a 3-3-6 system (three classrooms, three teachers, and six grades taught in a double session).

   Quality: (a) complete reform of curriculum of grades 1-9; (b) change in school system structure with nine years of general education for all and a wider diversity of technical education in higher secondary (grades 10-12); (c) a large retraining program for 900 Plan Basico (grades 7-9) teachers; (d) installation of a system of instructional television (ITV) for presentation of core material for Plan Basico (about 15 twenty-minute broadcasts per week in all major subject matters), and eventually for primary beginning about 1971.

   Sufficiency: (a) increase enrollment in secondary and primary; (b) build more secondary schools and increase classrooms in existing primary schools.

II. Evaluating a new technology: focus of research

From the above points, we can understand that El Salvador has decided upon some very fundamental changes in its educational system. It is the role of evaluation to help monitor these changes as much as possible. The work began in late 1968 with some baseline measures of where the system was starting from in order to assess better what

changes were taking place. The information gathered by the evaluation team serves a twofold purpose: It provides feedback to those who are directing the Reform so that they can better understand what is happening and readjust the system, where that is called for; it also will provide important information to planners in other countries who would like to use technology to improve education but are waiting to see how it works in pilot projects like that of El Salvador.

A critical point needs to be made at the outset. Educational technology (in the present case, television) is truly effective only when it is fully implemented; otherwise it remains a superficial symbol of modernization, attached to a basically unchanged educational system. To go further, we might say that the most important effect of television is not what it, as a medium, can teach students in the classroom (although this is an important benefit), but how it is an agent of change in an entire school system. The case of El Salvador may serve as an example.

The present reform in El Salvador was first conceived of several years ago as little more than placing a television set in each classroom. It was only as the implications of this idea became clear that the need for many other systemic changes became evident. For example, it is possible to use television without changing curriculum or teaching methods, as many early ETV projects illustrate.[1]

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[1]Cf. New Educational Media in Action: Case Studies for Planners. Paris: Unesco, 1967, vols. 1-3.

Television can be a multiplier of mediocrity as well as of excellence. The medium can spread bad teaching faster than a group of poorly trained teachers. When Salvadoran educators planned to use television to present core instructional material, they also considered what content was to be presented. Curriculum reform was a logical consequence.

Teachers can remain untrained and uninformed about a new technology, as they have been in many previous projects, but if educational technology is to work for change, teachers must accept it as a help and not as a threat.[1] In El Salvador, decision-makers opted to include teachers as implementers of the new technology and not leave them out to become its opposition. An expensive teacher-retraining program was undertaken as a corollary to the adoption of television. This meant that by the beginning of the 1970 school year, over half of the 900 Plan Basico schoolteachers had had some retraining, 260 with an entire year.

Television can present exactly the same instruction to all students at the same time. This makes possible a common evaluation of learning since a common curriculum was used and core instruction was identical. If television suggested the wisdom of a new curriculum, this latter has promoted the notion of a new kind of evaluation of

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[1]The Commission on Instructional Technology, To Improve Learning, Appendix B, "The Causes of Technology's Lack of Impact on American Education," Washington, D.C.: Government Printing Office, 1970.

student achievement. Rote examinations are geared to rote curricula and when the one changes so must the other. The Ministry has inaugurated a new evaluation program for grades 1-9 with new classroom methods for teachers to test pupils and, eventually, periodic common examinations created by a testing section of the Ministry. When such a system is fully functioning, it should also provide valuable feedback in the form of student learning measures and help to identify weaknesses in the instructional television system.

Television also has consequences on the structure of administration. A centralized schedule of classes for Plan Basico has had some good effects. School principals do not have to struggle to solve scheduling problems. Indirectly the fixed schedule has helped to eliminate the "taxicab" teachers who used to run from school to school teaching seventh-grade math or eighth-grade geography in perhaps three or four locations per day. With all class schedules the same, teachers can no longer do this. The Ministry also decided it was time to create full-time teachers in Plan Basico public schools, and the fixed television schedule might have made the decision more reasonable and acceptable.

The organization of supervision for feedback from the classroom becomes more urgent with a centralized instructional medium like television. The Ministry began with the idea of separate supervisors to help teachers utilize television in the best way, but it soon realized that teachers also need help with many other problems they face in the classroom. A renovation of the entire supervision system within the Ministry was in order.

Taking all of these changes into consideration, we see that television is not only a medium of instruction but a catalytic agent for change in the system. A major technological change has forced its own logic upon those who had decided to use it. El Salvador's educational leaders seem to have understood and accepted the implications that this innovation has for structural changes that go far beyond the placement of a piece of hardware in a classroom. There have been no other tests on a national educational system of the kind that is under way in El Salvador. To our knowledge no other country has accepted so completely the implications that educational technology carries with it. We are in the process of studying an important test case to see whether television's role as catalyst for systemic change as well as instructional medium for the classroom will achieve positive results.

If we accept this structural argument about the importance of technology in helping to change an educational system, we should anticipate a large number of changes with the adoption of television. Since the total effect of change will be found in many areas, this would seem to make the job of evaluation considerably more difficult: For example, we need to look at administrative organization, student learning, teacher behavior, parental attitudes, and a number of other areas that make up the educational system.

Since Salvadoran educators are most interested in how well their students are learning from the new system, we made two important decisions for the first school year. First, we decided to take

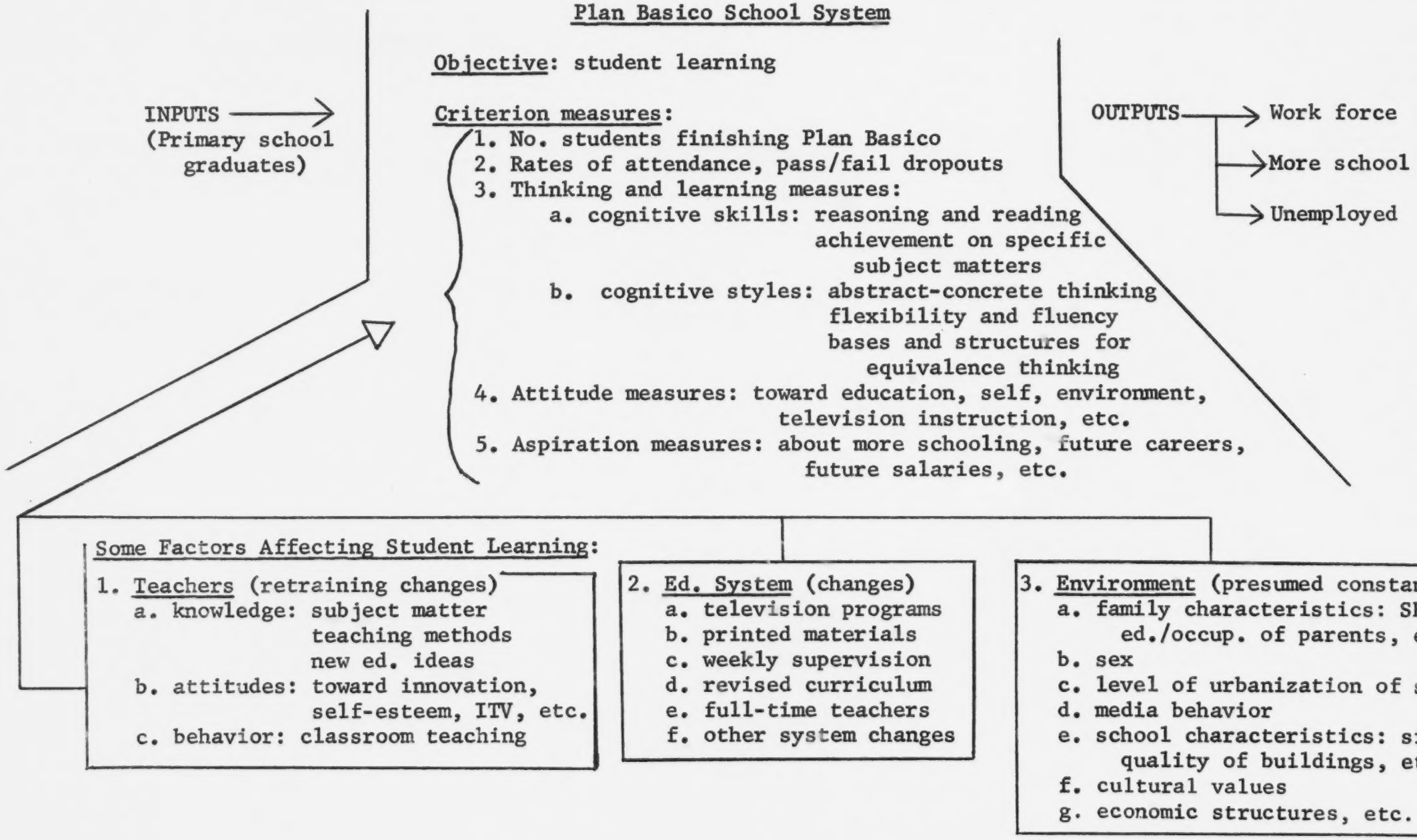
a close look at what students bring to their classes, their abilities, attitudes and aspirations, to see how these affect their achievement. Secondly, if it is true that the technology of ITV brings with it a system change, then we needed to study the old school system to find out what was the baseline to measure change by. It would not be enough to vary only television and have all other system components the same in the classical experimental paradigm, although this too would be done. We also wished to study what learning in the old system was like so that changes in the new one might be more fully understood.

It is clear that we are not dealing with a set of unrelated pieces but with a system that encompasses all of the factors in relationship to one another. Although the task of understanding the system and how it works has only begun, the research reported below has been carried out with the idea that the research done in many areas deals with the same underlying educational system. Figure one presents a schematized outline of some of the variables that we felt were important during the first year of the Educational Reform. It is an incomplete outline of the factors involved, but it will help to visualize and explain the logic of the subsequent chapters.

Evaluation must look for some objective criterion to judge whether the educational system is achieving its goal of educating its students. As Figure one suggests, this success might be measured in several ways. It may be enough for decision-makers to know how many students are getting through the system. In a gross way, it

FIGURE ONE

The School System: Factors Affecting the Learning Process


Plan Basico School System
Objective: student learning
INPUTS (Primary school graduates)
Criterion measures:
1. No. students finishing Plan Basico
2. Rates of attendance, pass/fail dropouts
3. Thinking and learning measures:
a. cognitive skills: reasoning and reading achievement on specific subject matters
b. cognitive styles: abstract-concrete thinking flexibility and fluency bases and structures for equivalence thinking
4. Attitude measures: toward education, self, environment, television instruction, etc.
5. Aspiration measures: about more schooling, future careers, future salaries, etc.
OUTPUTS
Work force
More school
Unemployed
Some Factors Affecting Student Learning:
1. Teachers (retraining changes)
a. knowledge: subject matter teaching methods new ed. ideas
b. attitudes: toward innovation, self-esteem, ITV, etc.
c. behavior: classroom teaching
2. Ed. System (changes)
a. television programs
b. printed materials
c. weekly supervision
d. revised curriculum
e. full-time teachers
f. other system changes
3. Environment (presumed constant)
a. family characteristics: SES, ed./occup. of parents, etc.
b. sex
c. level of urbanization of school
d. media behavior
e. school characteristics: size, quality of buildings, etc.
f. cultural values
g. economic structures, etc.

may be sufficient to know that this number is increasing at some given rate. The Minister of Education, in his address to the Salvadoran Legislature in August, 1969, pointed out that the public school secondary enrollment had increased by 74 per cent in two years.[1] We might refine this question by asking how efficient the system is by asking attendance, failure, and dropout rates as well. These too are available though sometimes the data are less than satisfactory. But the key question (for both old and new systems alike) is what the students learn in their Plan Basico years. Measures must be objective and comparable, not only of substantive knowledge (e.g., in math or social studies), but of reasoning and reading skills, of attitudes, values, and aspirations. All of these are important to the student's future work and his contribution to his country's development.

To ask what the student learns is to ask how he changes during his years in Plan Basico. We need to know what the student learns: Is it an accumulation of facts or an ability to reason about principles? How much does he learn (rates over three years would be ideal)? And, most especially, what factors affect this learning: the teacher, the school environment, the instructional material or method, family, or community factors? We need to know whether the changes in the educational system (use of television, printed materials, new curriculum, and so forth) and in the competence of the

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[1] Memoria de las labores del Ministerio de Educación, 1968-1969. San Salvador, El Salvador: Dirección de Publicaciones, Ministerio de Educación, 1969.

teacher through retraining will be able to overcome the constraints of the environment that make a student from the rural areas or from a poor family less likely to succeed in school. We need to compare the "traditional" with the new system to see how changes in the relationships of variables affect student learning.

Finally, of course, there is the question about the outputs of the system. We have not touched upon this area in our present research except to examine student aspirations for the future; nevertheless, questions need to be raised. Most succinctly put, we may ask: education for <u>what</u>? How many students are getting out of Plan Basico? Who are these students (are they mainly limited, for example, to a certain class, sex, geographical area)? What do they do when they finish: try to continue in school, find employment in the work force, or find themselves unemployed? We hope that in the next year or two a study of the relationship of education's goals with the national economic goals can be made to help create closer articulation between the two and ultimately to help planners provide more opportunity for graduates of the school system.

The focus of research to be reported in subsequent chapters follows the interest of Salvadoran leaders in the main areas of the Educational Reform and the ITV technology: its administrative plans and achievements, student ability, learning and aspiration, and the understanding and acceptance of teachers of the new technology of television.

Chapter Two

ADMINISTRATION: PLANS AND ACHIEVEMENTS

Introduction

No system of technology like that of El Salvador's instructional television just happens overnight. A long and often unwritten history usually precedes the ribbon-cutting ceremonies at a new studio or the fanfare of the first school broadcast. Moreover, unless this history is rooted in the felt needs of the people who use the system, and is not a mere gift of some external agency, then the project is not likely to succeed. The history of this project indicates that it had its origins in Salvadoran perception of the possibilities of television, long before final plans for its implementation were worked out between governments.

Three years before the first school broadcast took place in February, 1969, a committee of concerned Salvadoran citizens already existed whose interest was to promote the use of television in education. Lic. Walter Beneke, currently Minister of Education, was the head of the committee at the time. As ambassador to Japan for a number of years, Lic. Beneke had been impressed with the Japanese educational television system. When he returned to El Salvador, he carried with him the idea of trying to bring the same thing to his own country.

During 1966 and 1967, three separate studies investigated the feasibility of the idea. One was sponsored by the World Bank, one was carried out by a team of Japanese engineers, and a third by a Unesco team. In March, 1967, Col. Sanchez Hernandez, was elected President and the next month attended the hemispheric meeting of presidents at Punta del Este in Uruguay. It was at this conference that President Johnson offered to sponsor an experimental education program using instructional television that would be a model for other Latin American countries. President Sanchez showed immediate interest and negotiations began about making the pilot project in El Salvador.

In July, 1967, when President Sanchez officially took office, he appointed Lic. Beneke Minister of Education and thus insured that the new educational technology would have vigorous support at the highest levels of government. This was an important factor that influenced much subsequent history of the project.

In September, 1967, still another but more complete feasibility study was carried out by the National Association of Educational Broadcasters under contract to the Agency for International Development. In January, 1968, a loan team from AID came to El Salvador to make final studies and prepare for the writing of a document for a loan that would finance the beginning of the Reform project. The loan was drawn up and authorized by the U.S. Congress in June, 1968.

More details of the first 18 months of the Educational Reform and ITV system will be given below. We have also included in Section

II the five-year plan (1968-72) of the Ministry of Education for implementation of its Educational Reform. One criterion of success of the project is whether El Salvador will be able to keep to the very demanding schedule it has set itself. It has done so thus far.

I. The administrative record of the first 18 months

In addition to the testing and survey programs that have been carried out by the research and evaluation team since September, 1968, an administrative record of El Salvador's Educational Reform Project has been compiled. The record of the project's first 18 months represents an important first step in the construction of the detailed administrative history of El Salvador's Reform experience. It is hoped that such a history will eventually be able to give a full and accurate account of the variety of opportunities and problems (human, material, and organizational) that have confronted El Salvador's planners and that are likely to confront planners from other nations as they set their own courses for educational reform.

Method. Four principal data sources have been used to construct the administrative record of the Reform Project's first 18 months. The first of these is a series of Ministry of Education documents which serves as the formal guide to educational policy in El Salvador. Included in this category is a series of special reports on the Reform that Minister Beneke has presented to the National Legislature.

A second source of administrative record material has been the

semi-official history contained in monthly reports and other administrative memoranda. This material, which has been provided to the evaluation group by both Salvadoran leaders and their U.S. AID counterparts, has been particularly helpful in charting the growth and evolution of a complicated system which depends on the coordination of specialized activities (educational television, teacher training, curriculum writing, supervision, etc.) to succeed.

The knowledge gained as participant observers in numerous planning sessions constitutes a third source of administrative material. Here the researchers have had access to information that is extremely valuable in evaluating the processes of decision-making and policy implementation.

As a follow-up technique for exploring in depth the impressions gained as participant observers, a number of interviews have been conducted with project leaders as well as U.S. advisers. This is a time-consuming enterprise but one that often yields extremely rich information. It is the plan of the evaluation group to amplify this data source during 1970 in the hope that taped interviews of both Salvadoran and their U.S. counterparts will eventually form an oral history of the Reform Project.

Conclusions about administrative behavior and development are difficult to arrive at because of problems of measurement and the general sensitivity of people to this type of research. Therefore, it has not been our purpose at this point to draw many conclusions in our research program. The function of the following comments is

simply to highlight the areas in which administrative research is under way, and, at the same time, to offer a brief chronological outline of the Project's first year and a half.

A. Administration and finance. The relocation and structural reorganization of the Ministry of Education was a vital reform without which many of the subsequent reform measures could not have occurred. In July, 1967, Mr. Beneke, as new Minister of Education, inherited an organization housed in 20 buildings scattered throughout San Salvador. The Minister's immediate priority was to put his own house in order. With the financial assistance of U.S. AID and the services of Clapp and Mayne, Inc., a management consulting firm from Puerto Rico, a centralization plan was drawn up and presented to the Minister in May, 1968. Although this plan has now been largely implemented, poor horizontal communication among sections in the Ministry remains a problem that slows down full realization of many reform objectives.

Under the reorganization plan, educational television was set up as a separate section within the Ministry structure. This status gave it the freedom and flexibility to develop in its own way, unencumbered by the bureaucratic traditions and rigidities that often plague large organizations like ministries of education. Such independence was a mixed blessing, however, because the ETV Project has since been regarded by some as having too much freedom and power.

The financial security of the ETV Project was a question mark throughout the first 18 months. Following an initial $653,000 grant

from U.S. AID in 1968 to get the Project started, and a subsequent one of $400,000 in 1969, passage of a $1.9 million loan for general expansion was delayed first by the Salvadoran Legislature and later by the U.S. Government. Chances seem good for its final ratification in July, 1970 when it is to be presented to the Legislature, but it has been a long history of over two years of various delays.[1] Without loan money the ETV Project could not be expected to maintain its scheduled growth beyond the second year.

B. Curriculum revision. One of the most significant actions taken by Minister Beneke during the first year of his administration was the appointment of a national commission to reform the curricula for grades one through nine. Armed with the results of an elaborate teacher survey conducted in the Fall of 1968, the Commission of Plans and Programs set forth guidelines for a new national curriculum which, for the first time, included consideration of objectives, activities, teaching methodology, guidance, and evaluation. The Commission's guidelines became the basis for the actual rewriting of all the curricula by subject and grade level.

The concomitant changes in curriculum greatly benefited the ETV Project, which needed guidance in the areas of program content and teaching methodology. This occurred despite the fact that a number of the Ministry's curriculum specialists were skeptical about

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[1]Chances for its passage in July, 1970 seem good, but as of this writing it was still to be presented to the Salvadoran Legislature.

the idea of television in the classroom. By the end of the Reform Project's first 18 months, the new curriculum had been completed for the seventh and eighth grades (the first to receive televised instruction), and the curriculum specialists were turning their attention to the ninth as well as to the primary grades.

C. Educational television production. Following the organization of the ETV Section in the Ministry of Education in the Spring and Summer of 1968, and the inauguration of the San Andrés studio complex on September 20, 1968, work began immediately on the five program series which were scheduled for transmission to 32 seventh-grade classes in February, 1969. The schools which were to receive the televised instruction had been chosen as pilot centers. Their experience with television would be closely evaluated in order to gain insight into what changes would be necessary before the system could be expanded confidently throughout the entire country. The decision to proceed cautiously with ETV in the first year was a wise one. In this fashion, it was possible for the production specialists to grow into their jobs at a pace which would not sacrifice the quality of the televised lessons. Moreover, the seventh-grade curriculum would be tested. As it turned out, it was extensively revised.

The operation of any television facility requires, above all, the effective coordination of diverse tasks and talents. Scripts must be prepared far enough in advance so that graphic and film artists can prepare appropriate visual material; rehearsal time must be provided

so that television teachers can become thoroughly familiar with their lessons; and, ideally, pre-recorded programs should be finished far enough in advance to permit the addition or deletion of material prior to the actual transmission date. The scheduling of such activities is of critical importance if high-quality programs are to be produced.

The administrators of the ETV Section struggled with the difficult tasks of coordination and scheduling throughout the first year of broadcasting. Many of their difficulties were beyond their direct control. The physical isolation of the studio complex at San Andrés (about 15 miles outside of San Salvador) and the lack of adequate communication between the studio and the capital fostered numerous delays and inefficiencies. Production materials were often not delivered on time, film was not processed rapidly enough, and the studio lost electrical power with alarming frequency. These physical handicaps were compounded by the presence of a relatively inexperienced production staff which was expected to learn new skills on the job. Yet, despite all these obstacles, lessons were broadcast to the schools on schedule and, gradually, supply problems were overcome. Toward the end of the first full television year, the decision was made to move the entire production facility to a site closer to San Salvador. Although this move was not planned for the immediate future -- a complete new building would be required before such a move could take place -- its very contemplation was evidence that the ETV Project had accounted well for itself in the first year and that it could look forward to an increasingly important role in the future of Salvadoran education.

D. Teacher training. The programs for the training of Salvadoran teachers were in trouble at the time Lic. Beneke became Minister of Education. The number of official, semi-official, and private normal schools for primary teacher training had proliferated to the degree that they were turning out graduates far in excess of the ability of school systems to employ them. It has been estimated that more than 2,000 primary schoolteachers were unemployed in the Spring of 1967. At the same time, there was an undersupply of qualified teachers at the secondary level. Only about 20 per cent of the working secondary teachers had received the advanced training necessary for their level of instruction. To remedy these imbalances a drastic reordering of priorities and programs was needed.

As a first step, the Minister closed most existing normal schools. This was a bold decision which had strong political repercussions. Nevertheless, it succeeded in stemming the tide of primary schoolteachers, and it opened up teaching opportunities in the next school year for those recent graduates who had been unable to find positions up to that time.

A course of action for remedying the deficiencies in secondary teacher education was not clearly apparent. The cost of retraining all secondary teachers would certainly be quite high, yet the political dangers inherent in simply replacing the existing teaching force of about 800 with younger, and presumably better trained, graduates of an expanded Superior Normal School would also be quite high and would take many years. After further consideration of the alternatives, the

first strategy (i.e., to retrain) was adopted to the eventual benefit of the other areas of the reform.

A teacher-training facility was opened at San Andrés with the hope that at least all Plan Basico (junior high school) teachers could be retrained over a period of three years. The first group of teachers for the pilot TV classes received three months' training prior to starting TV classes in February of 1969. Most Plan Basico teachers, however, were required to attend a full year's course at the new normal school. During the first year's course, 260 teachers received further training in their field of specialization (either social studies and languages or math and science) as well as instruction in teaching methodology (including ETV utilization), guidance, and evaluation. Teachers received a full salary as well as room and board during their course. A rotation scheme was worked out so that replacements (mostly recruited from experienced primary teachers) could be provided those schools which had teachers attending the San Andrés program.

The importance of the teacher retraining program to the overall educational reform cannot be overestimated. Beyond the specific objective of preparing better qualified secondary teachers, the retraining courses seem to give Salvadoran teachers a new professional self-esteem that is doubly important at a time of massive changes in education. The participation of teachers in the educational reform has resulted in their better understanding and acceptance of most aspects of the Educational Reform. This is true despite the existence of a vocal

teachers' union which has continued its opposition to many of Minister Beneke's policies of change.

E. Supervision utilization. School supervision is the last area of the reform that has merited special scrutiny in the administrative record. To quote the Minister's Annual Report to the National Legislature: "Capable, honest, and efficient supervision is indispensable to the execution of the functions of the Ministry of Education. Supervision is the lubricant and the fuel of the complicated mechanism that is the educational system." (Memoria de las Labores del Ministerio de Educación, August 25, 1969)

The absence of effective supervision in El Salvador's system may be traced to a number of causes. Among them are low salary scales and poor working conditions for supervisors, the lack of adequate transportation, overcentralization, and, as a consequence of all this, personnel that often failed to meet required standards. These conditions have resulted in an extremely inefficient and negative kind of supervision. Even the highly motivated supervisor, lacking adequate professional training, has more often than not retreated into the shallow role of detective or auditor. Under the current system, the average supervisor is a faultfinder who is incapable of providing constructive criticism to the classroom teacher or of helping to solve school problems. It is easy to see why the teachers' union has come to distrust the kind of Ministry authority represented by the school supervisor.

Little progress was made toward the reform of school supervision during the Project's first 18 months. Vested interests within this section of the Ministry made change more difficult there than perhaps anywhere else. Sweeping alterations still seem to be required before any new concept of supervision can be put into effect.

One ray of hope in the picture has come from the San Andrés teacher retraining course and from the utilization section of the ETV Project. At the Normal School, concepts of supervision are being discussed along with new methodologies for improving the classroom performance of teachers. For the first time, teachers are being encouraged to criticize themselves. By means of a microteaching (low-cost videotape) unit, many teachers have had the opportunity to see themselves before a class of students. The experience of the first full year's retraining course is now being evaluated and distilled for purposes of developing a special program to train secondary school supervisors. Such a program could be an important first step toward the reform of the supervisory structure.

The work of the ETV utilization section during 1969 provided another encouraging indication that a new kind of supervision is possible in El Salvador. The role of the ETV utilization supervisor was that of a counselor. Classroom teachers needed help adjusting their schedules and lesson plans to the exigencies of television, and, through demonstration classes, group discussion, and individualized work sessions, the six ETV utilization supervisors actually provided the kind of assistance that is envisioned in the reform for

all secondary schools. Unfortunately, the quality of this group's work was quite uneven, leading the reform's leaders to the conclusion that supervisors as well as classroom teachers need the kind of intensive retraining experience that the San Andrés Normal School can now offer.

II. Administrative plans for the first five years: 1968-1972

This section presents the Five-Year Plan for El Salvador's Educational Reform as drawn up by the Ministry of Education and the National Planning Council (CONAPLAN). In order to clarify some terms and give the reader a better notion of what the educational system in El Salvador consists of, we feel a few remarks are called for.

El Salvador has a kindergarten system (parvularia) although it is relatively small (total enrollment, 21,799 in 1968). There are six grades in the regular primary school (primaria); enrollment is largely in public schools (95 per cent in 1968). The lower secondary cycle (Plan Basico) of three years (grades 7-9) follows a common curriculum set by the Ministry of Education (now being revised as noted). After Plan Basico, the system divides into the higher secondary leading to university (bachillerato) for grades 10-11, or into a number of more specialized courses (carrera corta) such as accountant, commercial secretary, bookkeeper, office helper, typist, and so forth. There is also a three-year normal training course for primary teachers after Plan Basico. Some of these specialized courses take two years to complete, some three. The plan for a diversified

higher secondary (bachillerato diversificado), referred to in the following pages, hopes to include more technical training in a general course that would give students at the end of three years the option of either going to the university or of entering the work force with some specialized training. Previously, most carrera corta courses were terminal and students could not go on to university from them.

Higher education can mean a three-year nonuniversity training course like that of the Superior Normal School (Escuela Normal Superior) for secondary schoolteachers, or of the Superior Agricultural School (Escuela Agricola Superior), or of the Central American Technical Institute (Instituto Technico Centro Americano) for training high-level technicians. The two universities (the National and a small private one under Catholic auspices) have professional courses that take varying numbers of years to complete. The number enrolling has been rising each year, but the number of actual graduates is only a fraction of original enrollments and the dropout rates are as high as 85 or 90 per cent.

For summary statistics on El Salvador's educational system, see Table 1.

The following is a translation of the Ministry five-year plan:[1]

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TABLE ONE

Some enrollment statistics on the educational system in El Salvador
(N.B. percentages are of totals at head of column)

1. Kindergarten (parvularia): one-two years

October, 1968		February, 1969	
Total: 21,799		Total: 23,218	

2. Primary (primaria): six years

October, 1968		February, 1969	
Total: 428,376		Total: 516,875	
Public:	408,018 (95.3%)	Public:	494,690 (95.7%)
Private:	20,358 (4.7%)	Private:	22,185 (4.3%)
Boys:	226,027 (52.7%)	Boys:	272,693 (52.7%)
Girls:	203,349 (47.3%)	Girls:	244,182 (47.3%)

3. Secondary

A. Plan Basico: three years

October, 1968		February, 1969	
Total: 38,793		Total: 46,913	
Public:	17,061 (44.0%)	Public:	25,550 (54.5%)
Private:	21,678 (56.0%)	Private:	21,363 (45.5%)
Boys:	21,002 (54.2%)	Boys:	26,243 (56.0%)
Girls:	17,737 (45.8%)	Girls:	20,670 (44.0%)

B. Higher secondary (bachillerato): two-three years

October, 1968		February, 1969	
Total: 9,103		Total: 10,620	
Public:	3,986 (43.7%)	Public:	4,898 (46.1%)
Private:	5,117 (56.3%)	Private:	5,722 (53.9%)
Boys:	5,403 (59.4%)	Boys:	6,401 (60.3%)
Girls:	3,700 (40.6%)	Girls:	4,219 (39.7%)

C. Short Courses (Carrera corta): two-three years

October, 1968		February, 1969	
		Total: 27,343	
Accountant:	5,041	Accountant:	7,616 (27.8%)
Comm. Sec.:	3,829 (all girls)	Comm. Sec.:	5,197 (19.0%)
Bookkeeper:	3,560	Bookkeeper:	5,958 (21.7%)
Office help:	3,688	Office help:	4,935 (18.0%)
Others:	1,489	Others:	3,637 (13.3%)

4. University (universidad): five years +

(N.B. No data available on higher, non-university education.)

February, 1969	
Total: 7,541	
National Univ.	6,504 (86.3%)
Catholic Univ.	1,037 (13.7%)

A. Administrative reorganization

1968 - First semester:

- Physical centralization of administrative offices of the Ministry.
- Study of the administrative reorganization of the Ministry.
- Study of the system of classifying employment positions and their functions.

1968 - Second semester:

- Execution of planned administrative reorganization of the Ministry.
- Elaboration of the first draft of regulations for the Office of General Administration.
- Begin revision of Teacher Classification System.
- Prepare and present the Law of Stability of Teachers.

1969 - First semester:

- Creation of the Office of General Administration.
- Plan for technical assistance for improving administrative organization in the Ministry.
- Elaborate first draft of regulations and handbook of operations for the Office of General Administration.
- Mechanization, by computers (IBM), of the present teacher classification.
- Begin elaboration of the Teacher Classification System.
- Begin full-time teachers in all public secondary schools in the country.

1969 - Second semester:

- Final form of Teacher Classification System and reform of law.
- Elaboration of regulations for classification of teaching personnel.
- Implementation of regulations and working manuals for the Office of General Administration.
- Finish general regulations for education.

1970 - First semester:

- Establish regulations for teaching and technical personnel.

1970 - Second semester:

- First evaluation of administrative reorganization of the Ministry.
- Make adjustments of the administrative reorganization of the Ministry.

1971 - First semester:

- Implement adjustments of the administrative reorganization of the Ministry.

1971 - Second semester:

- Second evaluation of the administrative reorganization of the Ministry.
- Implement adjustments of the administrative reorganization of the Ministry.

1972 - First semester:

- Implement adjustments of the administrative reorganization of the Ministry.

1972 - Second semester:

- Third evaluation of the administrative reorganization of the Ministry.
- Implement adjustments of the administrative reorganization of the Ministry.

B. Revision and adaptation of curriculum (plans and programs)

1968 - First semester:

- Organization of Board of Advisers for Plans and Programs and beginning of their functions.
- Study of the first draft of the document "Fundamental Policies of the Educational Reform 1968-1972."

- Office of Technical-Pedagogical Services:

  a) Diagnosis of ongoing or defunct curriculum programs for primary school and Plan Basico.

1968 - Second semester:

- Board of Advisers for Plans and Programs:

  a) Continue the revision of the document "Fundamental Policies of the Educational Reform 1968-1972."

- Office of Technical Pedagogical Services:

  a) Study of antecedents of curriculum now in use.

  b) Elaborate a transitional curriculum for the experiment of educational TV for the seventh grade.

1969 - First semester:

- Board of Advisers for Plans and Programs:

  a) Submit the document "Fundamental Policies of the Educational Reform 1968-1972."

  b) Analysis of the curriculum of the educational system and recommendations for a new one.

- Office of Technical-Pedagogical and Planning Services:

  a) First draft of the curriculum for grades 1-9 for general education.

  b) Planning Commission for the Central American Technological Institute.

  c) Preparation of first draft of the curriculum of the Institute.

1969 - Second semester:

- Board of Advisers for Plans and Programs:

  a) Revision of the first draft of the curriculum for grades 1-9.

  b) Revision of the Plan for Studies of the Central American Technological Institute.

- Office of Technical-Pedagogical and Planning Services:

  a) Organization of subjects to be taught according to the curriculum outline adopted.

b) Preparation of transitional program for the first course of the Higher Secondary School for Agriculture.

c) Begin the activities for orienting teachers to use the new programs.

1970 - First semester:

- Board of Advisers for Plans and Programs:

a) Study the organization and functions of the diversified cycle of nonuniversity higher education.

- Office of Technical-Pedagogical and Planning Services:

a) First draft for the curriculum of the diversified higher secondary cycle (bachillerato diversificado)

b) Continue orientation and follow-up in use of new programs for grades 1-9.

1970 - Second semester:

- Board of Advisers for Plans and Programs:

a) Continue working on same areas as previous semester.

- Office of Technical-Pedagogical Services:

a) Elaboration of programs for the diversified cycle and for nonuniversity higher education.

1971 - First semester:

- Board of Advisers for Plans and Programs:

a) Revision and adjustments of the content of the educational systems.

- Office of Technical-Pedagogical Services:

a) Activities for orientation in the use of new programs.

1971 - Second semester:

- Board of Advisers for Plans and Programs:

a) Continue working on same areas as previous semester.

- Office of Technical-Pedagogical Services:

a) Continue working on same areas as previous semester.

1972 - First semester:

- Board of Advisers for Plans and Programs:

a) Planning of the first evaluation of the educational system.

- Direction of Technical-Pedagogical Services:

a) Execution of the first evaluation.

1972 - Second semester:

- Continue working on same areas as previous semester.

C. Supervision of schools

1968 - First semester:

- Reduce the number of normal schools and control enrollment of the existing ones.

1968 - Second semester:

- Distribution of ODECA-ROCAP textbooks (for primary schools) all over the country.
- Supervision:

a) Elaboration of project for geographic redistribution.

b) Short course for training of 90 school supervisors.

1969 - First semester:

- Complete the following projects:

1. Ten rural schools with six grades and three teachers.
2. Establishment of 14 science laboratories in primary schools, one in each department of the country.
3. Use of new teaching methods investigated in experimental schools.
4. Planning of the activities of distribution, orientation, utilization, and evaluation of the regional program for ODECA-ROCAP textbooks.
5. Initiate counseling activities for students in the last three years of general education (grades 7-9).
6. Establishment of the system of full-time teachers for secondary education.
7. Trial of the programs for the first course by TV in 32 schools.

- Supervision:
  a) Geographic redistribution of school visit plan.
  b) Revision of regulations.
  c) Short course for retraining and selection of school supervisors.
  d) Acquisition of vehicles.

1969 - Second semester:

- Organization of teacher meetings to train them on the new programs for general education.
- Supervision:
  a) Prepare course for the training of 50 school supervisors.
  b) Revision of regulations.
  c) Acquisition of vehicles.

1970 - First semester:

- Use of the new curriculum for general education all over the country.
- Extend and intensify projects 1, 2, 3, 4, 5, and 6.
- Establish first year of the Higher Secondary for Agriculture and the first year of the Central American Technological Institute.
- Supervision:
  a) Establishment of the new regulations.
  b) Yearly course for the training of school supervisors for different levels.

1970 - Second semester:

- Organization of personnel who will give orientation to teachers who will be in charge of diversified higher secondary schools.
- Supervision:
  a) Acquisition of vehicles.
  b) Continue course for training school supervisors for different levels.

1971 - First semester:

- Implementation of programs for diversified higher secondary and for those courses for nonuniversity higher education.
- Supervision:
  a) Acquisition of vehicles.
  b) Annual course for diversified cycle.

1971 - Second semester:

- Continue orientation activities for teachers of diversified higher secondary.
- Supervision:
  a) Continuation of course initiated in previous semester.

1972 - First semester:

- Organization of evaluation plan for the different programs and projects.
- Supervisors:
  a) Acquisition of vehicles.
  b) Annual course for training school supervisors for different levels.

1972 - Second semester:

- Continue evaluation of programs and projects.
- Supervision:
  a) Continue annual course.

D. Educational television

1968 - First semester:

- Training of technical personnel.
- Obtain grant for the TV studio.
- Submit loan application for acquisition of transmission equipment and expansion of the studio and materials center.

1968 - Second semester:

- Installation of TV studio.
- Move offices to "Alberto Masferrer" Normal School (San Andrés).
- First trials of utilization in 15 classrooms.
- Organization of 35 TV classrooms for next year.
- Three-months course for teachers who will teach in 35 TV classrooms in 1969.

1969 - First semester:

- Submit Loan Application Project to Legislature.
- Experimental utilization in 35 Plan Basico TV classrooms.
- Annual course for TV teachers for Plan Basico.
- Work out plans and specifications for equipment needed for expansion of studio materials center and facilities for transmission bids.

1969 - Second semester:

- Experimental use of ETV in 35 receiving centers.
- Develop annual teachers' training course in San Andrés for classroom teachers who will use TV in Plan Basico.
- Installation of transmission equipment, center for materials, and expansion of studios.
- Three-months course for classroom teachers who will use TV in 35 classes in 1970.

1970 - First semester:

- Extend experimental program for Plan Basico to the eighth grade.
- Extend the program to more classrooms of the first year in Plan Basico.
- Organize and tape annual in-service training course for primary schoolteachers.
- Installation of the second channel for transmission.

1970 - Second semester:

- Continue plans for first semester.

- Three-months course at San Andrés for classroom teachers using TV.

1971 - First semester:

- Extend the program to the third course in Plan Basico, and extend it to more classrooms in first and second years.
- Annual course in San Andrés for classroom teachers using TV in Plan Basico.
- Transmission of annual in-service training course for primary teachers.

1971 - Second semester:

- Continue plan for first semester.

1972 - First semester:

- Continue the use of TV for the three courses in Plan Basico, and extend this to the whole country.
- Annual course in San Andrés for classroom teachers using TV in Plan Basico.
- Transmission of annual in-service program for primary teachers.
- Experiment with use of TV in primary.

1972 - Second semester:

- Continue work started in first semester.

E. Diversified higher secondary school (bachillerato diversificado)

1968 - First semester:

- Begin action for obtaining financing.
- Work out plans for diversified higher secondary.

1968 - Second semester:

- Submit the project to foreign financing agencies.
- Negotiate loan terms.

1969 - First semester:

- Revision of project:
  a) Approve and ratify financing by the Legislature.
  b) Train teachers for technical teaching inside country.
  c) Work out architectural designs for priority I.
  d) Work out documents for bids on equipment for priority I.

1969 - Second semester:

- Construction and provision of equipment for National Institutes (public five-year high schools - grades 7-11), priority I.
- Organization of Higher Secondary for Agriculture.
- Work out architectural designs, priority II.
- Work out documents for bids on equipment for other priorities.

1970 - First semester:

- Trial of first-year curriculum of Higher Secondary for Agriculture.
- Train classroom teachers and administrative personnel in other countries and also in this country.
- Continue architectural designs and work out documents for bids on construction.
- Construction and equipping of schools in priority II.

1970 - Second semester:

- Continue construction and equipping of schools in priority II.
- Work out architectural design of priority III.

1971 - First semester:

- Continue construction and equipping of schools in priority III.
- Total implementation of diversified higher secondary (first year) in all existing schools.

1971 - Second semester:

- Continue activities of previous semester.

- Work out architectural design for priority IV.

1972 - First semester:

- Construction and equipping of schools in priority IV.
- Continue total implementation of diversified higher secondary.

1972 - Second semester:

- Continue work begun in first semester.
- Total evaluation of project.

F. Formation and training of teachers

1968 - First semester:

- Centralization of teacher training in "Alberto Masferrer" Normal School.

1968 - Second semester:

- Three-months course for the training of 100 Plan Basico teachers.
- Three-months course for 150 primary school principals.
- First training course for 160 science teachers for higher secondary.

1969 - First semester:

- Annual training course for 250 Plan Basico teachers in "Alberto Masferrer" Normal School.
- Two-year training course for 30 teachers for technical schools.
- One-year course for training of 30 teachers for agriculture in the Superior School of Agriculture in San Andrés.
- First of the two-year training courses for physical education teachers.
- Training course for teachers in charge of science laboratories for the primary school level.

1969 - Second semester:

- Continue with plan for first semester.

- Second training course for 160 teachers and the first training course for 200 science teachers of higher secondary.
- Training course for 450 kindergarten teachers.

1970 - First semester:

- Annual training course for 300 Plan Basico teachers.
- Training course abroad of 20 principals of diversified higher secondary.
- Training course of one year abroad for 10 teachers of technical subjects.

1970 - Second semester:

- Continue with plan of the previous semester.
- Second training course for 200 science teachers of higher secondary.

1971 - First semester:

- Annual training course for 350 Plan Basico teachers.
- First year of the systematic training of primary teachers (normal higher secondary)
- First year of systematic training of Plan Basico teachers (two-year course at "Alberto Masferrer" Normal School).

1971 - Second semester:

- Continue with plan of the previous semester.

1972 - First semester:

- Continue with plan of the previous semester.

1972 - Second semester:

- Continue with plan of the previous semester.

G. School Construction

1968 - First Semester:

- Survey and analysis of the primary school program in the metropolitan area.

- Begin first stage in the construction of the Central American Technical Institute (shops and storerooms).

1968 - Second semester:

- Submit application for financing of primary school construction in the metropolitan area.
- Prepare feasibility study for urban and rural primary and Plan Basico schools.
- Submit application for financing of the construction of National Institutes (five-year high schools).
- Continue construction of first stage of the Central American Technical Institute.
- Begin construction of second stage of the Central American Technical Institute (Laboratories)

1969 - First semester:

- Readjustment of feasibility study of the program for urban and rural primary and Plan Basico schools.
- Approval and ratification by the Legislature of the financing of diversified higher secondary program.
- Continue second stage in construction of the Central American Technical Institute.
- Begin construction of experimental school in La Libertad.
- Prepare survey of school construction.

1969 - Second semester:

- Construction of 250 classrooms for primary in the metropolitan area.
- Begin construction of 11 classrooms for program of diversified higher secondary.
- Prepare schedule to initiate the school construction project.
- Negotiate financing, readjust, and present the program for primary and Plan Basico schools to the Legislature.
- Finish second stage in construction of the Central American Technical Institute.
- Finish construction of experimental Plan Basico school in La Libertad.

1970 - First semester:

- Ratification by the Legislature of the program for construction of primary and Plan Basico schools.
- Finish construction of 11 classrooms for diversified higher secondary.
- Begin construction of 72 classrooms for higher secondary and 34 classrooms for Plan Basicos in the program of diversified higher secondary.

1970 - Second semester:

- Finish construction of 72 classrooms and 34 classrooms for Plan Basicos in the program of diversified higher secondary.
- Begin first stage in the construction of 180 Plan Basico classrooms and 720 classrooms for rural primary schools, and 80 classrooms for urban primary schools not located in the metropolitan area.

1971 - First semester:

- Finish first stage in the construction of 180 Plan Basico classrooms, 720 rural primary school classrooms, and 80 urban primary schools not located in the metropolitan area.
- Begin construction of 55 classrooms for higher secondary and 90 classrooms for the Plan Basicos in the program of diversified higher secondary.

1971 - Second semester:

- Finish construction of 55 classrooms for higher secondary and 90 classrooms for the Plan Basicos in the program of diversified higher secondary.
- Begin second stage in the construction of 300 classrooms for Plan Basico and 720 classrooms for rural primary schools, and 80 classrooms for urban primary schools not located in the metropolitan area.

1972 - First semester:

- Finish construction of second stage of the 300 classrooms for Plan Basico, 720 classrooms for rural primary schools, and 80 classrooms for urban primary schools not in the metropolitan area.

- Begin third stage in construction of 120 classrooms for Plan Basico, 540 classrooms for rural primary schools, and 60 classrooms for urban primary schools not in the metropolitan area.
- Begin construction of 27 classrooms for higher secondary and 33 classrooms for Plan Basicos in the program of diversified higher secondary.

1972 - Second semester:

- Finish third stage in the construction of 120 classrooms for Plan Basico, 540 classrooms for rural primary schools, and 60 classrooms for urban primary schools not located in the metropolitan area.
- Finish construction of 27 classrooms for higher secondary and 33 classrooms for Plan Basicos in the program of diversified higher secondary.

Chapter Three

STUDENTS: THE PROCESS OF LEARNING

Introduction

The technology of television will have its most direct effects on the students it reaches in the classroom. It will also, as we have pointed out earlier, play an important role as a catalyst of change in many other aspects of the educational system -- in curriculum, in classroom evaluation, in teaching methods, and so forth. But ultimately, whether it is indirectly through structural changes in the system, or directly in classroom instruction, students are the focus of interest in an educational reform and the ultimate criterion by which we judge the success of its technology.

Success is not narrowly defined in the present research, even though we give somewhat more attention to quantitative results on ability or achievement tests. No educational system can be judged by the number of points gained on a single test. Not only is this subject to technical criticisms concerning reliability but, more importantly, students learn much more in school than how to score high on ability or achievement tests. There are also questions to be asked of the educational system about how well a student can face and solve new problems in his environment, or how concerned he is about the social problems of his community, or how open he is to

change itself. The goals of learning are broad and we must try to assess students in as many aspects of learning and change as possible.

During this first year of research, we have focused on three areas of student growth and change: learning, encompassed in ability and achievement tests; cognitive growth patterns, assessed in three separate studies of different age and social groups on equivalence grouping and alternative thinking; motivational or affective factors, measured in two surveys at the beginning and end of the school year in the aspirations, attitudes, and values of students. Added to these three aspects of the student, we gathered information on family background, social milieu, and other factors that will help to interpret results in the first three areas.

I. Rote learning and the impact of television: an hypothesis

The argument stated in Chapter one about the structural changes in the educational system that television has introduced in El Salvador is important in the present chapter. We created two kinds of control groups in the first year, eight classes in four schools with television, four of these having all the changes brought about by the Educational Reform except a television set in the room, and four having television as well. The second comparison group consisted of twelve classes from the old system unchanged from previous years. Comparisons were made among these three groups, but we placed the main emphasis on comparing the old and new systems, and relatively less on comparing the two kinds of classes (TV and no TV) within the

new system. The following paragraphs attempt to clarify the importance of this comparison of old and new systems by developing a picture of what learning in a traditional classroom is like and proposing an hypothesis of what learning changes may occur in a classroom with television.

Although the term "rote learning" is quite commonly used by educational planners, few have attempted to define it. Nearly everyone agrees that it is something bad, and the teachers involved in our studies said it should be eliminated from the educational system. Classroom observation, however, reveals that teacher attitudes are often more enlightened than teacher behavior, and even those who condemn rote learning verbally still practice it in their classes. It is a deeply ingrained fact of many educational systems, including those in the most technically advanced countries. A brief description of some characteristics of the rote classroom may help to clarify why this should be so.

The rote method does not exist in a pure state anywhere since even the most simple memory method calls for some associative elaboration by a learner. Moreover, not even the most advanced educational system wants to do away with memory work entirely. The manifestations of the classical "rote" system obviously vary from country to country and even from school to school. But we may list some of its characteristics as we have observed them in Salvadoran classrooms:

1. Information sources: Often there is no other source of information available to the student except the teacher;

few books, magazines, even mass media are available, and, if available, do not provide information relevant to "school" subjects.

2. Teacher position: The teacher, who is the sole source of information, is also an authority figure, giving final interpretation on the meaning of the information; secondly, as Beeby points out in his book, The Quality of Education in Developing Countries, teachers may be so poorly prepared that they stick to the curriculum or their notes and will not risk answering questions outside the narrow range of the curriculum.

3. S-R learning scheme: From the first use of unison recitation in the early grades, to the later emphasis on word-for-word memory of notes taken by dictation copying or copying from a blackboard, to tests that stress memorized definitions or filling in the blanks, the major emphasis is based on a stimulus-response type of learning which gives little encouragement to comprehension or curiosity.

4. Verbal emphasis: Education is limited to a verbal and highly abstract content; what the teacher says or dictates or copies on the board constitutes the content of "school" learning; almost the entire body of information (except for mathematical expressions) is conveyed in verbal strings uttered by the teacher.

5. Memory valued: The system of evaluation places an emphasis on memory and students are rewarded for literally reproducing large amounts of material from their notes.

What are some of the results of this kind of learning system? For one, little emphasis is given to active student participation in the learning process. Comprehension in a narrow sense is stressed, and then only at the higher grade levels. Students are not encouraged to ask questions but to behave, sit quietly in their places, and copy the "facts" that a teacher is dictating. If the teacher is better educated, he may dictate notes on a book he has read but, because books are scarce, students have little opportunity to read. Moreover,

since the teacher is practically the only source of information, and since teaching consists largely of dictating, most "school" learning consists of memorizing information processed by the teacher. Memory is rewarded and infrequent tests put an emphasis on almost literal recall of all that one's notebooks contain. Failure and repeater rates are often high and the students who do advance through the system are programmed to memorize. Asking questions or thinking of alternative solutions to a problem is not encouraged. In brief, schooling becomes an abstract word game or an abstruse exercise that one performs in the classroom for a few or for many years, depending on one's ability to play by the rules.

This is not a picture of any specific class in El Salvador or anywhere else where rote learning still exists in some form. Rather it is a general picture of some characteristics and their consequences in the school system. How might the factors in El Salvador's Educational Reform and especially television be expected to change this situation?

First, television instruction provides an important alternative source of information to students. They learn from both the classroom and the television teacher. Moreover, television provides a far wider range of information than a single classroom teacher can provide. Not only is the television teacher generally better trained than the classroom teacher, but he has more information at his disposal through specialized resource people in the production team. Moreover, besides the usual lecture, he can, if he chooses, present

the information in a wide variety of ways -- in movie clips, visual illustrations, experiments, maps, color slides, and so forth. Not only is an alternative source of information available but a variety of presentation methods by television encourages the classroom teacher to experiment with different methods as well.

There are other increases in information for the student in the new system. Teachers with retraining bring more to their classes in terms of new information and more professional confidence; they can more easily allow questions that ask why. Students receive printed workbooks for doing exercises with most information that they would previously have copied into notebooks already printed and summarized for them. Active, guided exercises in the workbooks vary development of learning skills. Students also learn from fellow students when they participate in group projects like building a relief map of Central America or collecting and displaying Mayan artifacts. Furthermore, simple scientific experiments show students that they can learn from their physical environment by observation and measurement. Social studies activities also emphasize the need to observe and learn from the social environment of the communities in which students live. All of these sources, then, provide alternative forms of information to the student in the new system -- workbooks, television classes with their variety of forms in which information is presented, fellow students, social and physical environment.

When sources of information are greatly expanded, the method of learning is necessarily altered in a rote learning system. The

hypothesis of this chapter, for which we have only indirect evidence thus far, is this: When sources of information are greatly expanded in a school system, the information can no longer be filtered through the teacher, and students are forced to begin processing their own information. They discover, as does the teacher, that a simple memorization of more and more facts is no longer feasible and they are forced to learn more efficient principles of information processing, to use sources of information when they are needed, and not to carry around an excess in their heads.

Television's particular advantage is that it can help promote these changes throughout an entire school system and not limit these benefits just to the advanced, urban areas. The relative amount of information available to students varies a great deal from large, middle-class urban schools to small isolated rural schools. El Salvador's ITV system will be the first to cover the entire school system of a nation, to reach every school regardless of its location. We might expect that the relative changes in ability to process and use information in problem-solving would be greater in those schools where students are more isolated from information sources. Changes of this kind, however, are difficult to measure and may take several years to show up clearly. Some of our data in the following sections give indications that this is beginning to take place.

The system of instruction in which television has played an important part is quite different from the traditional system as it existed in Salvadoran Plan Basico schools before the Educational

Reform. Our emphasis in the following sections will be on understanding the differences between the old and the new learning and to discern what benefits the new system might offer to student growth.

II. The process of cognitive growth: three studies

How much a student is able to learn in his first year of Plan Basico depends a great deal on what he brings to the classroom, his previous training in school, his family background, and how much these have equipped him to think. We tried to measure where the student stood as he entered Plan Basico (seventh grade) with general ability and learning tests (which we shall discuss later). But these data give us no idea of the process of cognitive growth that led up to this point. A developmental look at how Salvadoran students grow in certain basic cognitive skills over their primary school years seemed called for. Three studies report the results of our investigation.

A. Picture equivalence study.[1] The first two studies[2] examine how children learn to categorize and classify. This skill is developed over a period of years and its growth is generally marked by a child's growing skill at using superordinate classifications (ones that encompass a number of items in a single class),

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[1]The two equivalence studies using pictures and words are derived from studies by Olver and Hornsby and Maccoby and Modiano in J. S. Bruner, et al, Studies in Cognitive Growth (New York: Wiley, 1966).

[2]These two studies were carried out with Dr. Donald F. Roberts of the Institute for Communication Research, Stanford University.

and also by a greater abstraction since the more objects that can be placed in a single superordinate category, the more removed it is generally from the concrete, perceptual characteristics of the individual object. This basic human skill may be greatly influenced by the environment in which it is developed, including the kind of schooling or lack of it that a person is given.

In our present design, we studied children at four different age levels and in five distinct social and school environments. For the picture equivalence task, we randomly selected 10 boys and 10 girls from first, third, sixth, and first year of Plan Basico (seventh). The primary school groups were from a rural school, a poor urban school, and an elite private school, as well as equivalent age groups for some rural children who had had little or no schooling and were, consequently, illiterate. The four Plan Basico groups were varied on rural-urban and television-non-television factors (only three are included in subsequent figures).

A total of 320 students were tested individually with the picture task. This consisted of a group of 42 watercolor drawings of common objects. These were on 4 x 6 cards and placed in a prearranged order in a matrix of six columns and seven rows. A student was asked to identify each object by name which he usually did with little difficulty. Then he was asked to choose from the matrix objects that seemed to be alike or to go together and then give the reason they were alike or belonged together. This response was recorded, the pictures replaced, and he was asked to repeat the task

using any of the pictures but not exactly repeating himself. This continued for ten trials.

The scoring of responses was done in two ways. First the basis for the grouping was judged as either depending on some external trait of the object, called a perceptual basis for grouping, or on something one could do with the object, called a functional basis for grouping, or whether it was simply a name for the object that identified neither the perceptual nor the functional aspects of the objects (this latter was called a nominal basis for grouping).[1]

The second kind of scoring refers to the structure of the grouping, or the general ability to make groupings that are all-inclusive. There are basically two categories: superordinate grouping, that is, a grouping that includes some characteristic common to all the objects chosen; or complexive grouping, one that does not succeed in finding a single characteristic common to all objects but uses some combination of several characteristics to fit all objects into a group.

The results of the picture study are still being analyzed, but preliminary results are available. An analysis of variance revealed a large number of both age and group differences which are given graphic representation in Figures two through six. What is clear from the figures is that the manner in which a Salvadoran

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[1]Some more detailed analysis will be done on the data; the present report does not go into all of the details of coding and scoring.

FIGURE TWO

Per cent of groupings based on different attributes on picture equivalence task for four primary and three Plan Basico groups

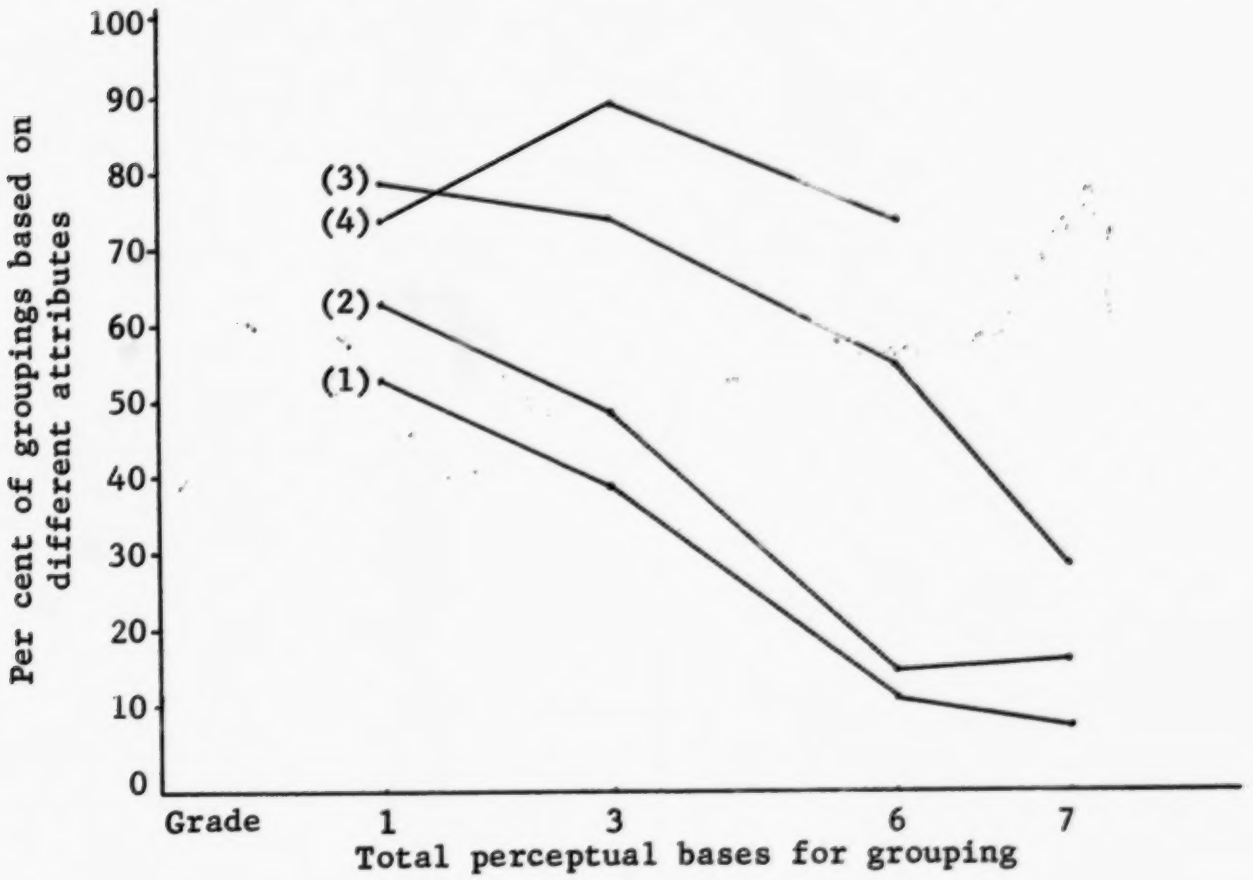


FIGURE THREE

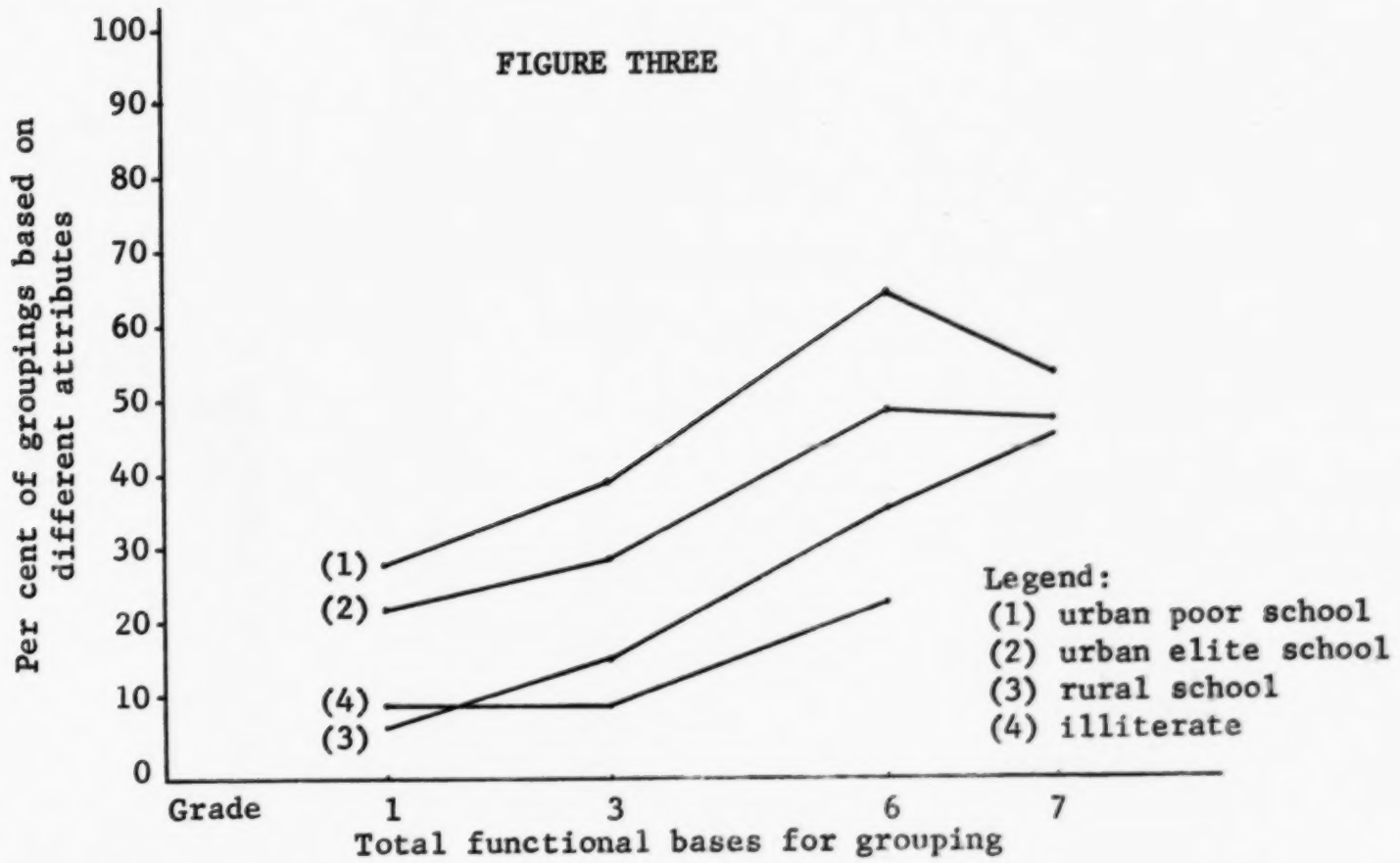
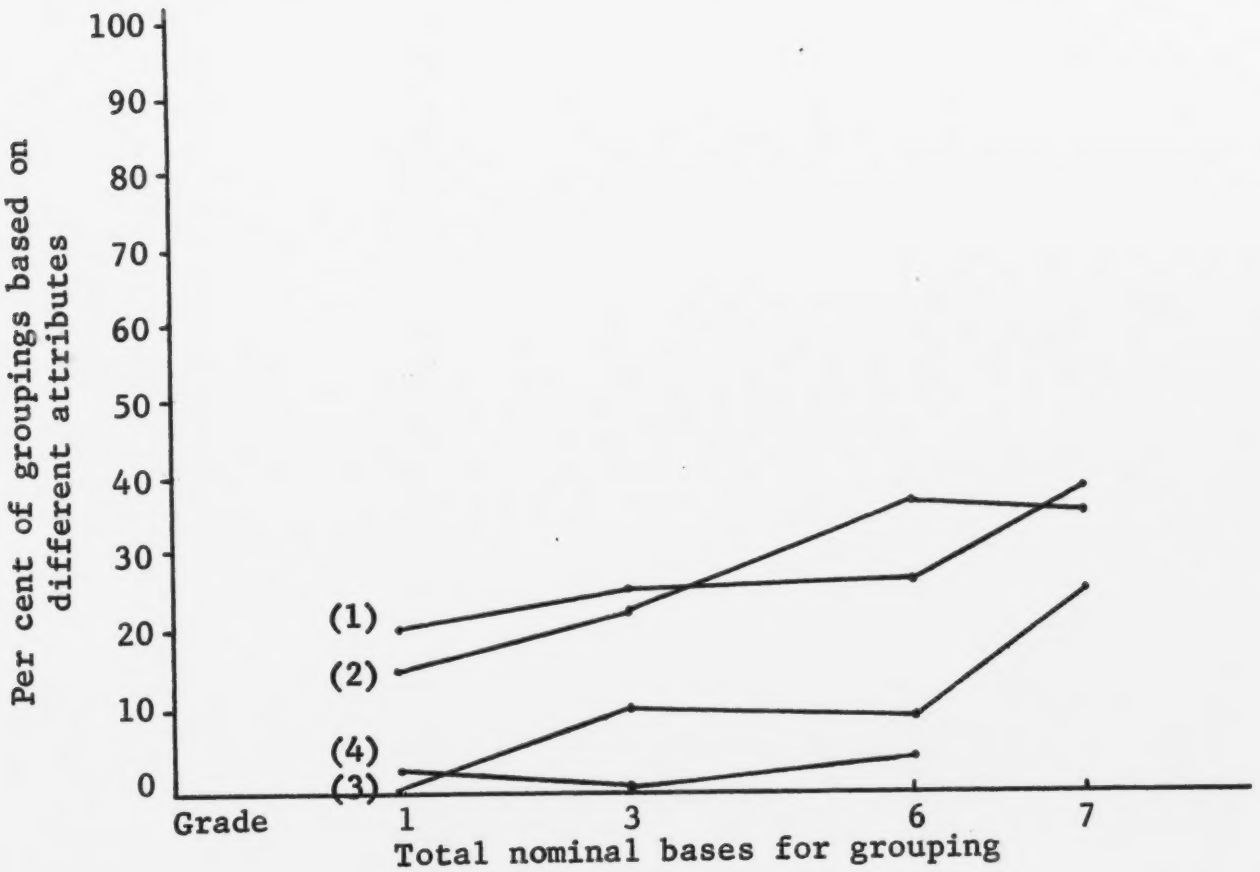


FIGURE FOUR

Per cent of groupings based on different attributes on picture equivalence task for four primary and three Plan Basico groups



Legend:
(1) urban poor school
(2) urban elite school
(3) rural school
(4) illiterate

FIGURE FIVE

Per cent of groupings based on different attributes on picture equivalence task for four primary and three Plan Basico groups

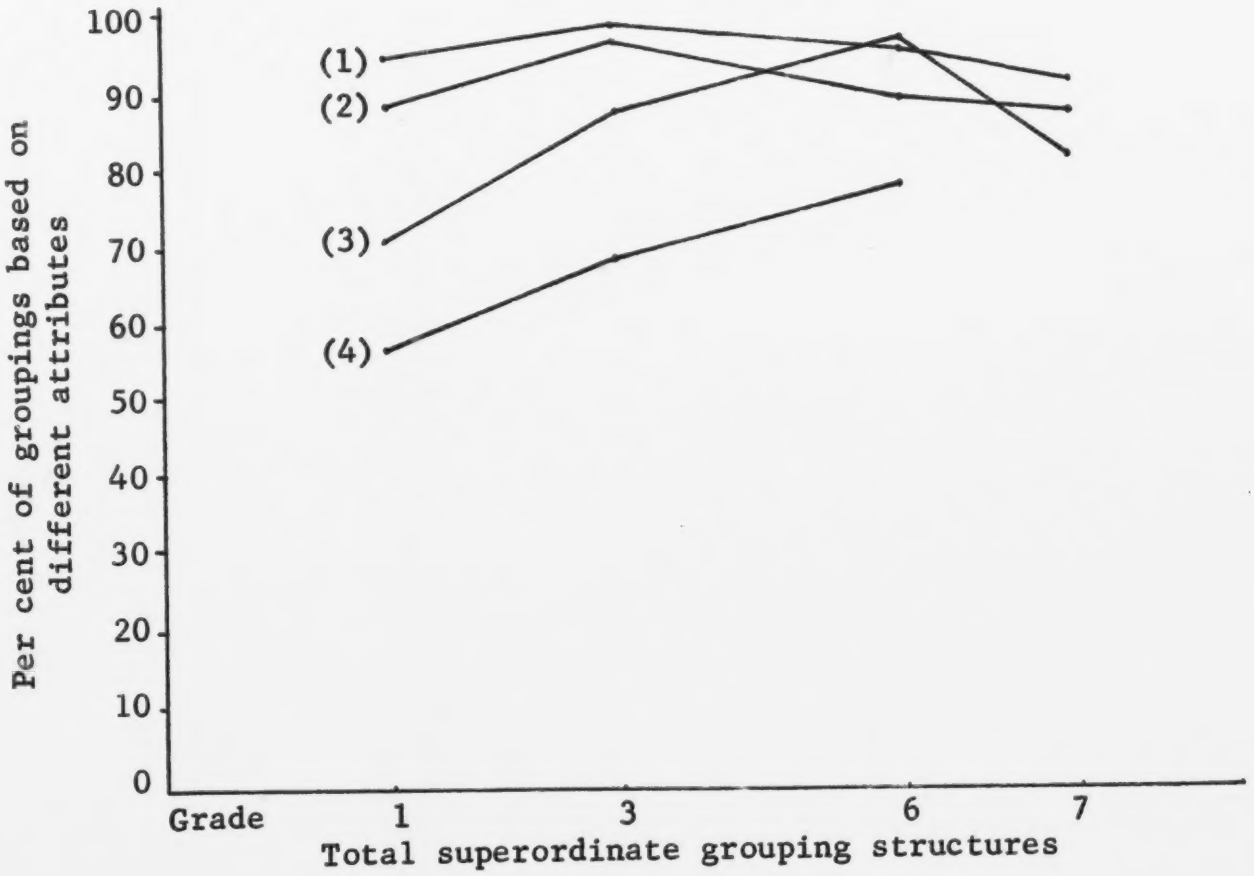
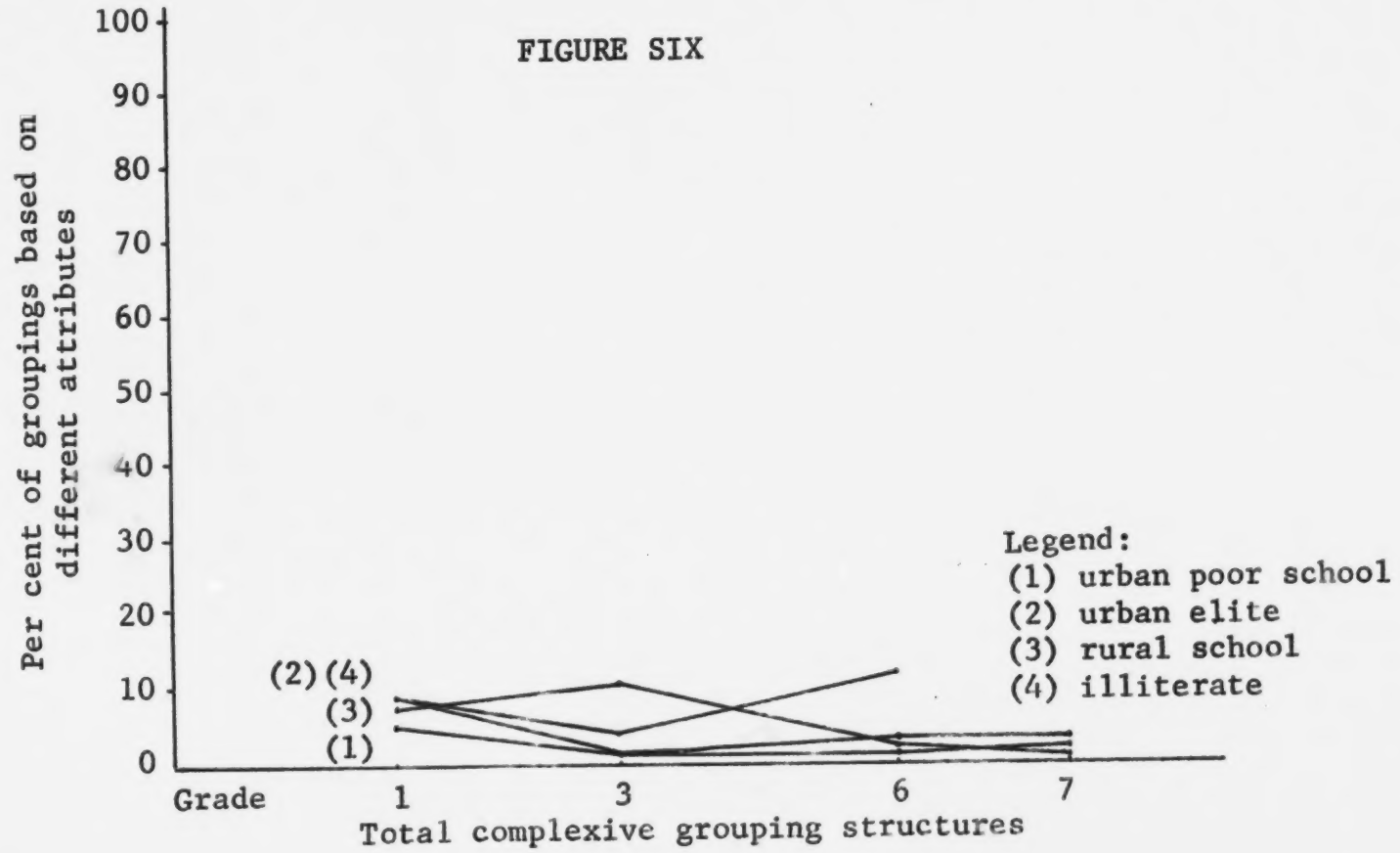


FIGURE SIX



student groups objects varies over age and that the level of this pattern depends upon one's social and school background. We must note that the poor urban school used in this study was an outstanding one which offered its students an excellent form of instruction. It therefore was very close to the elite school in the level of its results. The clearly emerging pattern is for younger children to depend much more on perceptual characteristics to find equivalences but, as they grow older, they begin to give more and more functional responses. Nominal responses also increase with age but at a slower rate. This means that as children grow older, they turn to more abstract reasons for putting things into classes: from what an object looks like to what it is used for or even to what it is called. It is also clear from the figures that the same age groups from different social and school environments are at significantly different levels in the grouping ability, especially in the three primary groups of first, third, and sixth grades.

The results of the grouping structures, seen in Figures five and six, were somewhat equivocal. The vast majority of students succeeded in finding superordinate categories for their grouping -- many more than might ordinarily be expected. This seems to have been due to the free choice situation where children were free to choose as many objects as they wanted for their groups. As it turned out, most children only chose the minimum of two. In this case, it is easier to find a common characteristic and there is less need to resort to a complexive grouping scheme as there is when a child is

confronted with a group of four or more objects to place in a common category.

B. Word equivalence study

The design for this study was identical with the picture equivalence study except that the illiterate group was not included. The task was found to be too demanding for children without schooling and responses on a pretest were largely meaningless. All other subjects were identical for both studies. Tasks on the two studies were either given separately (several weeks apart) or their administration was counterbalanced, one subject getting the word task first, then the picture, the next subject the opposite treatment order.

The word task consisted of presenting the student with two words, orange and banana, printed in large letters on 4 x 6 white cards. He was asked how the two objects represented by the words were alike and his response was recorded. Next a third word, potato, was added and the student was asked how this latter was different from the first two, then how all three were alike. A fourth word, meat, was added and the procedure repeated. This was continued until the array consisted of the following words: orange, banana, potato, meat, milk, water, air, germs. At the end, a final word, stones, was added and the student was asked only how it differed from the others.

Scoring was exactly the same as in the picture task for equivalence groupings. For responses on differences among objects the procedure varied slightly on coding structure differences but

the basis for grouping and coding differences was identical. Difference results, however, will not be reported here.

Results on the word equivalence task were similar to those on the picture task and gave us assurance that the skill being assessed was being measured reliably. Analysis of variance was performed on these data as on the previous ones. Some graphic representation of results are presented in Figures seven to eleven. The trends in the word study were identical to those of the picture study except that the word task elicited fewer perceptual responses and more functional at the youngest age level as might be expected from the nature of the stimulus material, colored pictures suggesting color and form responses much more readily than do words.

What the results of these two studies indicate is that the development of a basic cognitive skill like classification depends greatly upon factors of social and schooling background as well as on age. Most revealing of all was the group without schooling that performed the picture task. If we look at Figure two, we see that this group alone did not follow developmental trends across age in reducing the percentage of perceptual bases for grouping but remained almost identical in their grouping behavior over the three age levels. The basis of their grouping was tied to the way an object looked, to its concrete, perceptual characteristics. This showed little change over age while all other groups showed children using fewer perceptual bases for grouping and considerably increasing their functional and nominal bases. This development of the grouping skill toward a more

FIGURE SEVEN

Per cent of groupings based on different attributes on word equivalence task for three primary and three Plan Basico groups

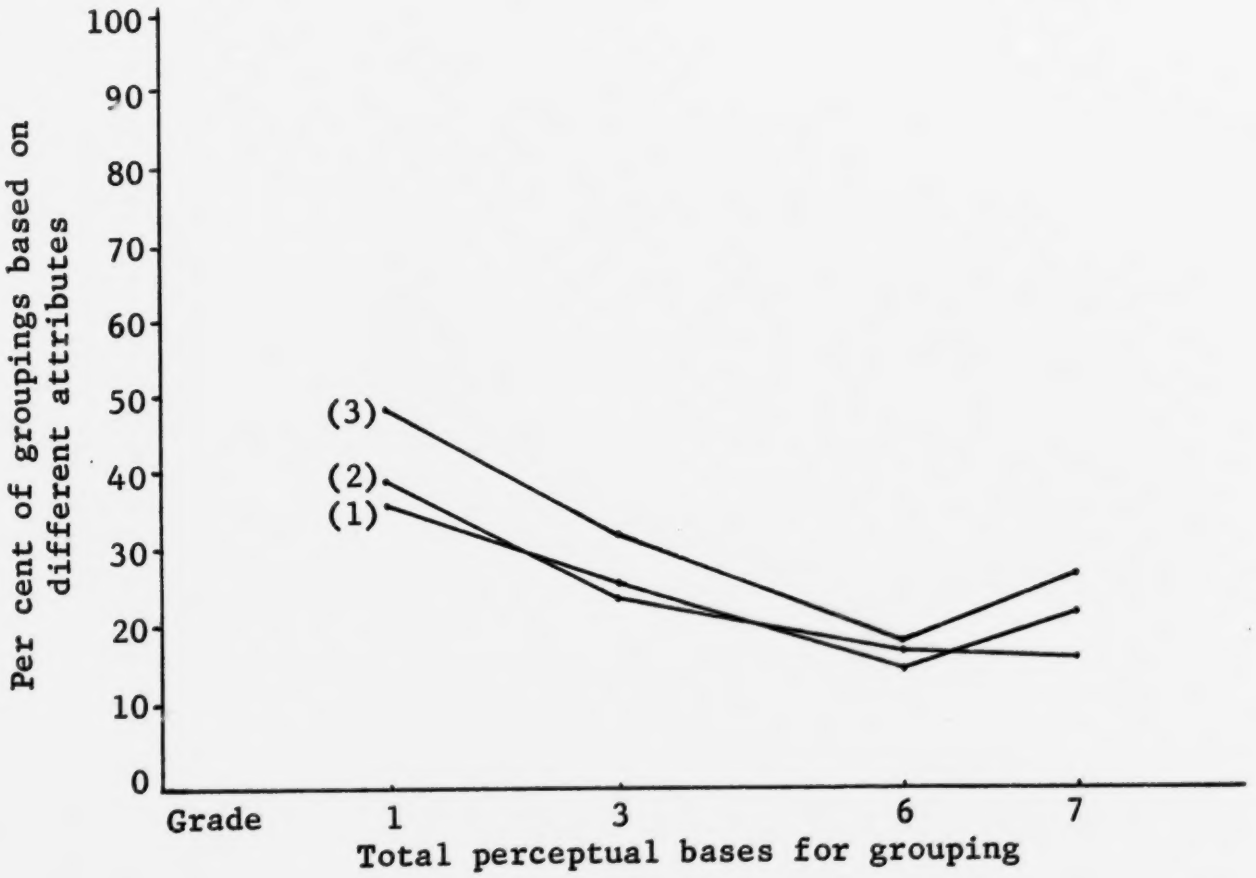


FIGURE EIGHT

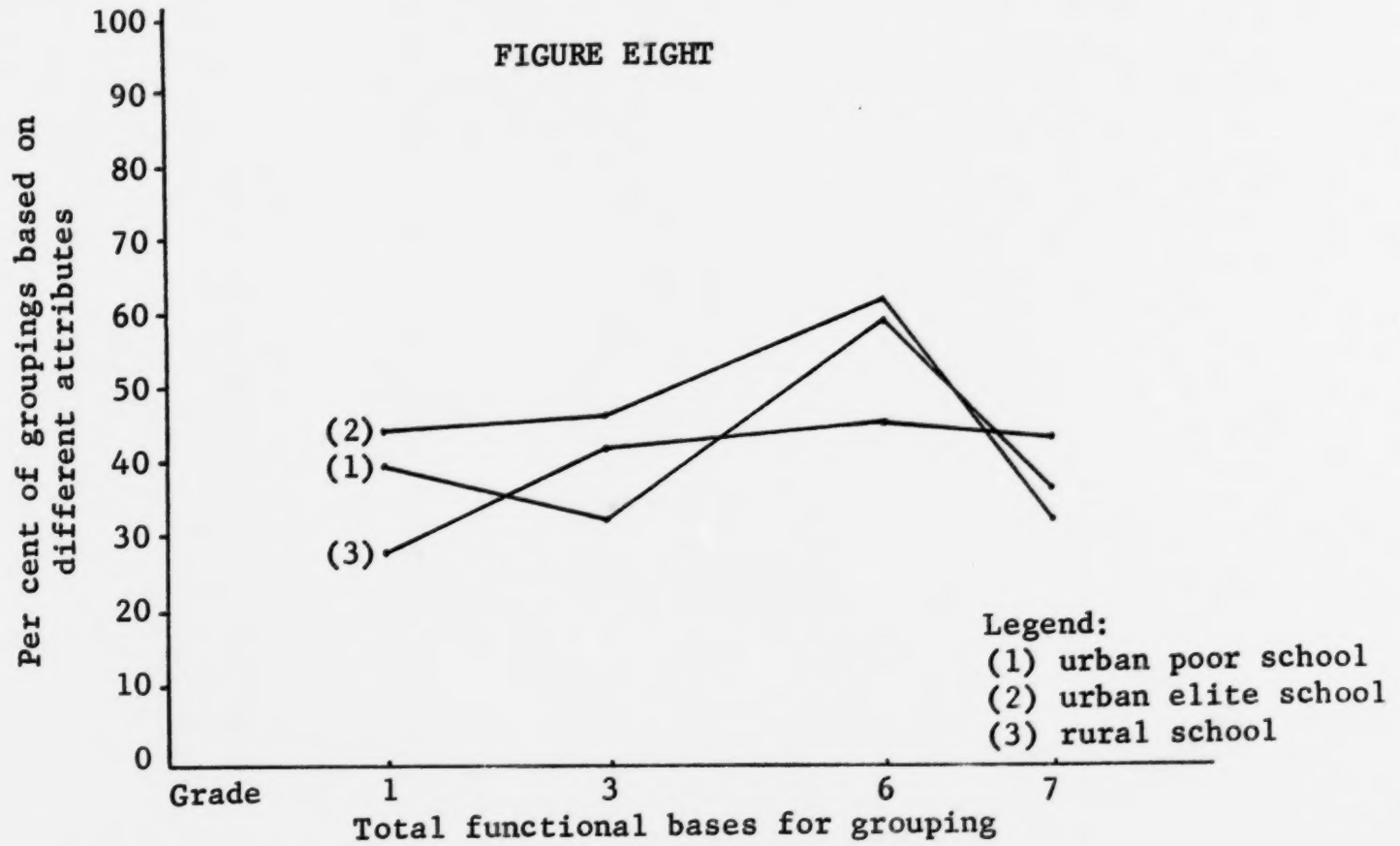
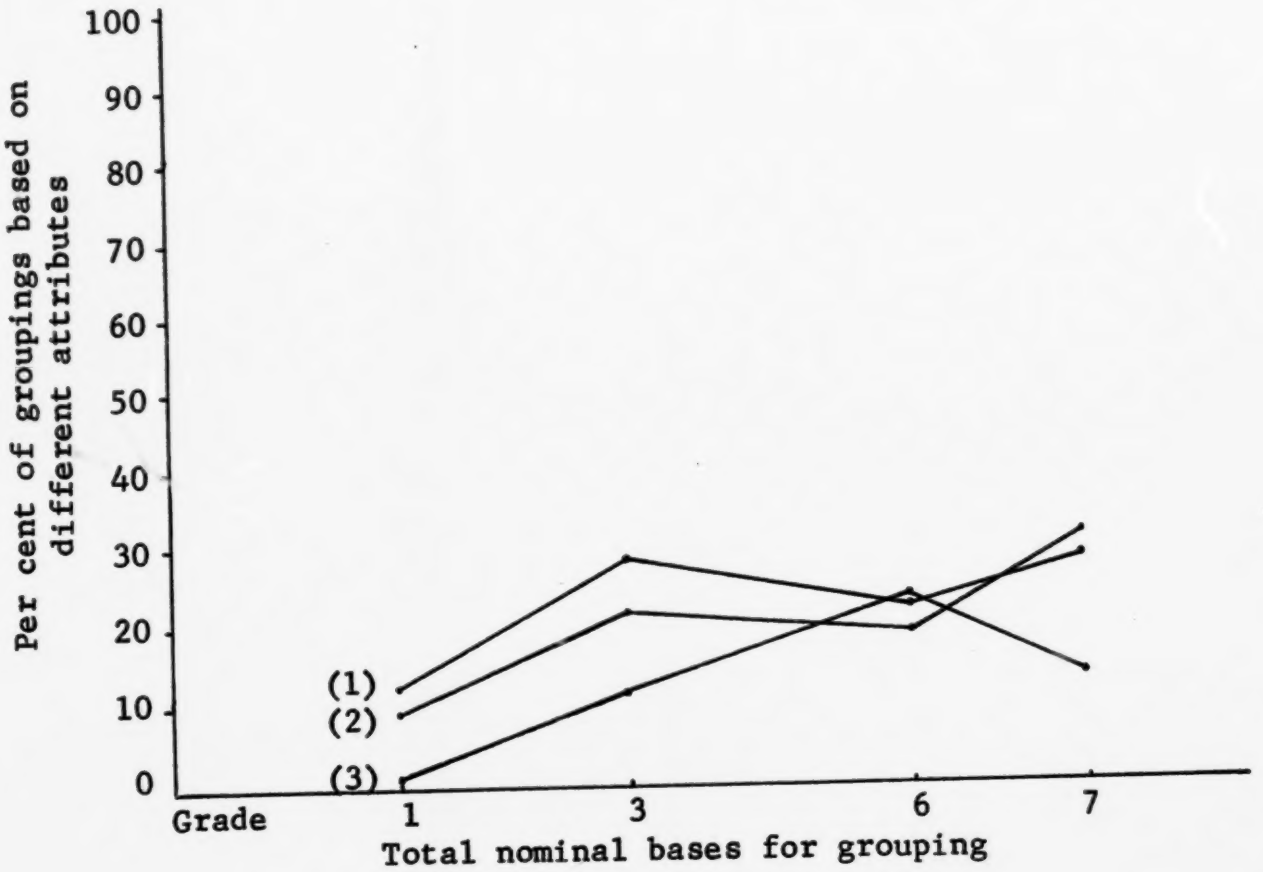


FIGURE NINE

Per cent of groupings based on different attributes on word equivalence task for three primary and three Plan Basico groups



Legend:
(1) urban poor school
(2) urban elite school
(3) rural school

FIGURE TEN

Per cent of grouping structures on word equivalence task for three primary and three Plan Basico groups

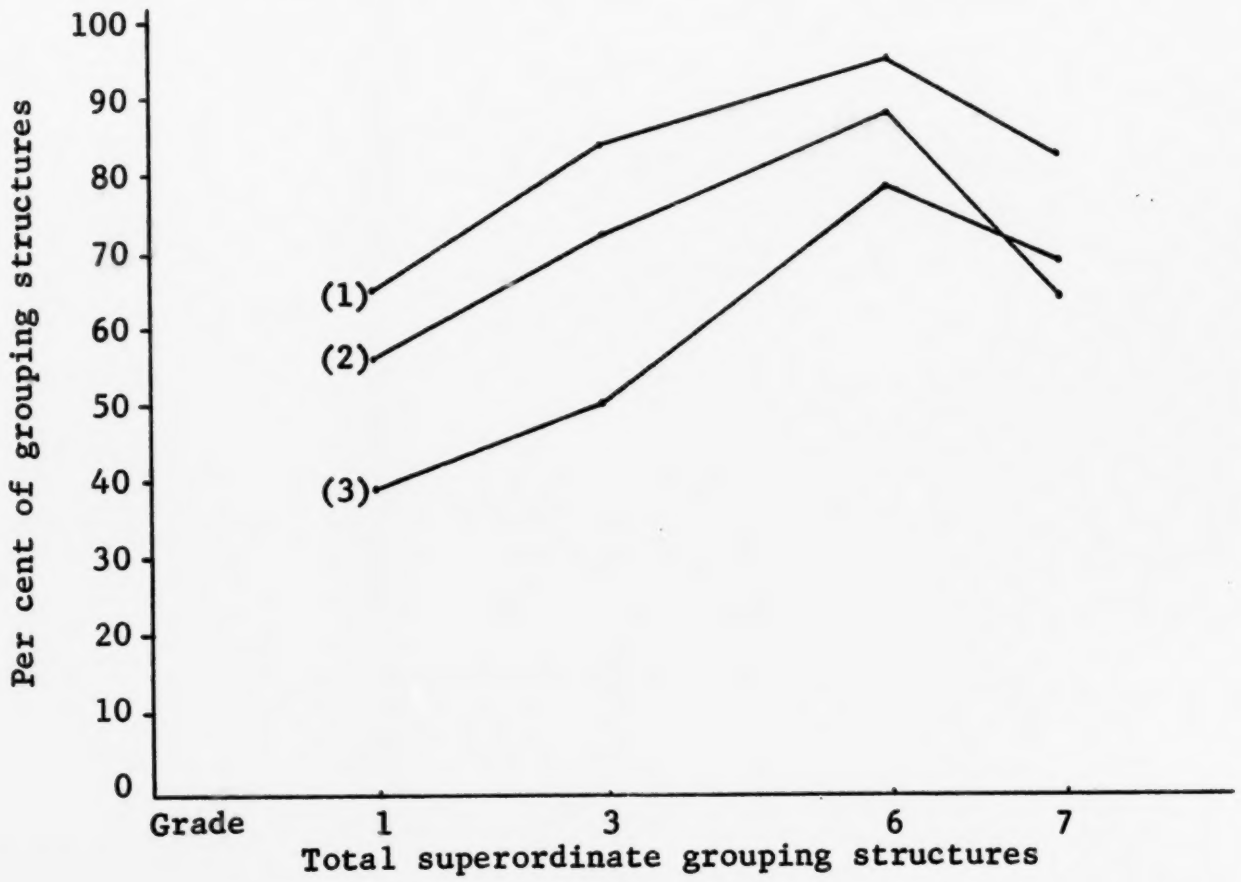
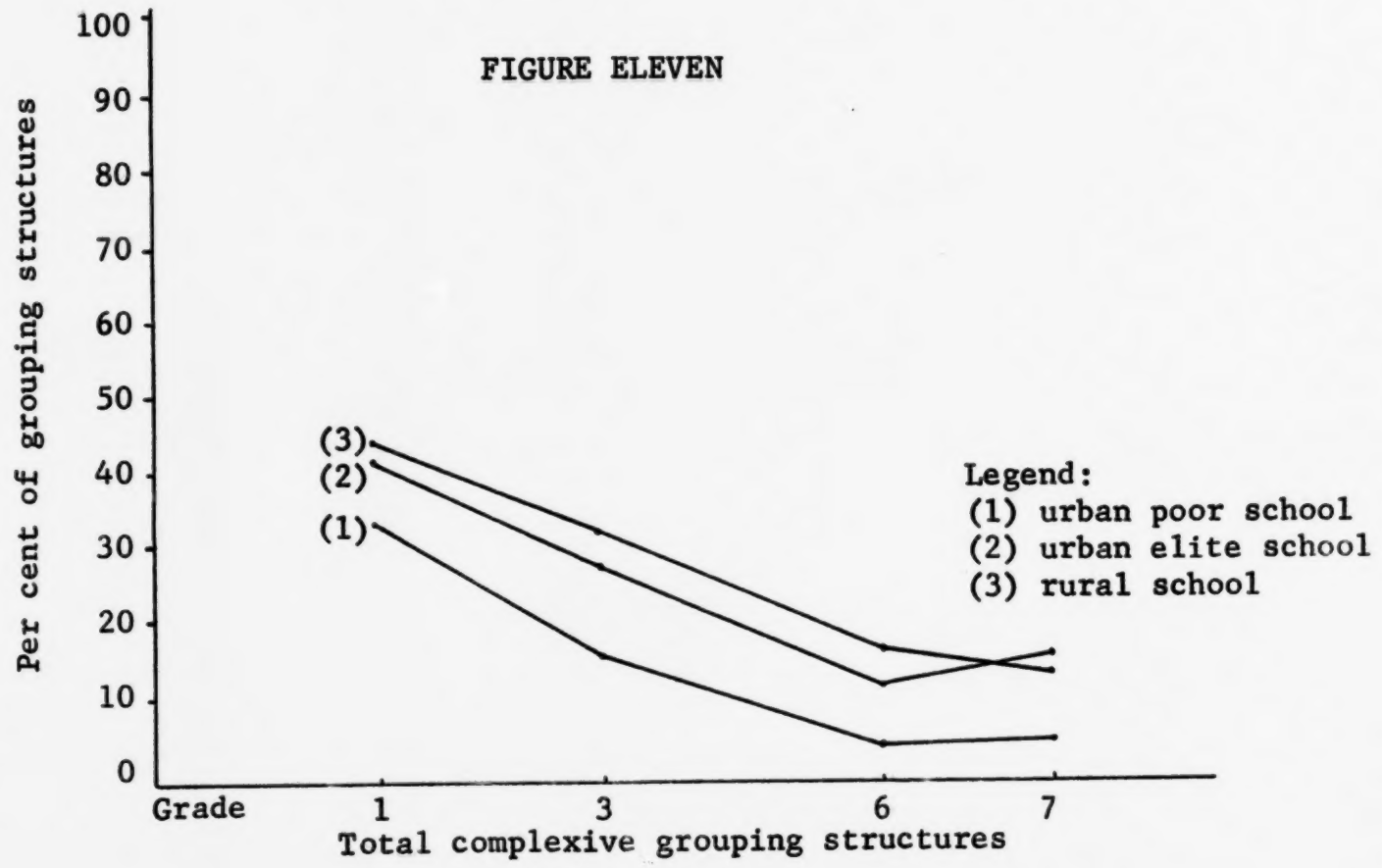


FIGURE ELEVEN



abstract level seems to depend a great deal upon the experience of school. Furthermore, the gap between the rural and the two urban groups, indicates that the level of the skill's development also has to do with the kind of instruction one receives in school.

When we compare the two urban groups with data from similar studies in the United States,[1] we find relatively little difference. The differences between the rural and the two urban groups in El Salvador is greater than that between the urban groups and equivalent U.S. age groups.

We would hope that with a greatly improved quality of instruction for the entire school system through the use of ITV and other changes introduced by the Educational Reform, this process of cognitive development might be speeded up for students in rural areas, and that differences between various social and geographical sectors might be reduced.

C. Alternative uses task

When a child is given a familiar object, like a Kleenex, and asked what he can do with it, he will say "Wipe up things," or some similar response. If he is then asked how many other things he can do with it, he may be able to give many or few answers and these may be mostly connected with cleaning or wiping or may range over a whole series of other uses that have nothing to do with the original function

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[1] C.F. Bruner, et al, Studies in Cognitive Growth, p. 73.

of the Kleenex. This kind of task is often used to test the child's ability to think of alternatives when presented with a stimulus or with a problem, or the flexibility of his thinking. It was originally developed as a measure of creativity.

A study using the alternative uses task was carried out in two urban schools which drew large numbers of their students from very poor neighborhoods. Both schools drew from a restricted geographical area and had students with the same socioeconomic backgrounds. The main difference between the two schools was their different approach to instruction. The one, which we will call the experimental school, stressed active student participation in learning, the second, which we will call the traditional school, stressed rote learning. Both schools were relatively new and were striving to improve their teaching, but the one chose a new, the other a traditional method of teaching.

Students were drawn randomly from first, third, and fifth grades, 10 boys and 10 girls from each grade. They were tested individually by two experienced Salvadoran experimenters.

The nature of the experiment also included presenting the objects in varying stimulus conditions, either handing the object to the student (touch condition), showing him the object but not allowing him to touch it (look-only condition), displaying the object in a color slide (film condition), or displaying the object from various perspectives in four color slides (multiple-perspective condition). Four different objects were presented to the student -- an empty

Pepsi Cola bottle, a newspaper, a large rubber band, and an 8 x 6 inch clear plastic bag. Procedures and objects were pretested in El Salvador.

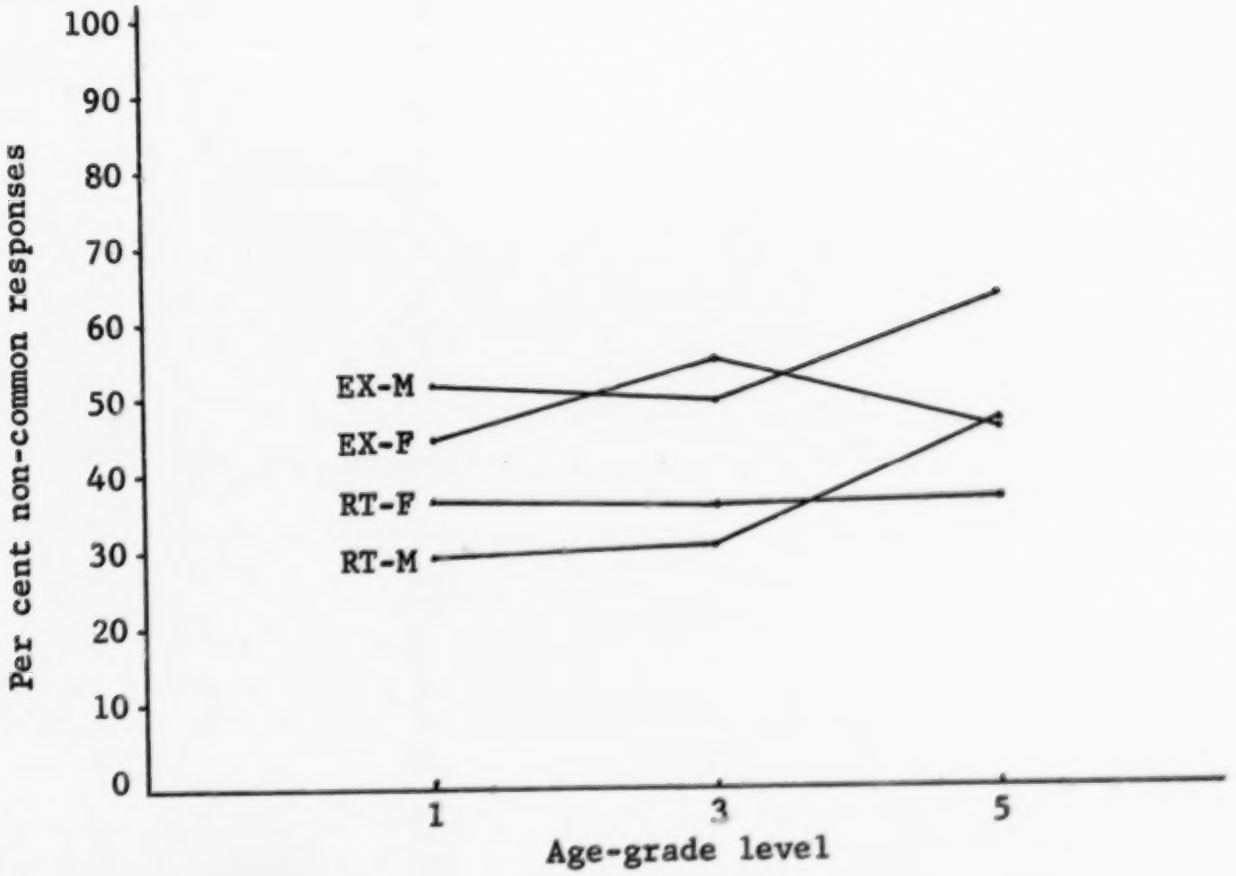
Scoring looked at two factors in a student's responses: how many total responses the person gave during a limited time period -- sometimes called a measure of his fluency -- and how many responses the student gave that did not stick to the common use of the object, a measure of his flexibility or his ability to think of an alternate range of non-common uses.

Results are presented graphically in Figures twelve and thirteen. In an analysis of variance with total scores, the age of students, their school, and the treatment conditions were highly significant as main effects. On nonstandard or uncommon responses, students from the experimental school gave significantly more responses than those from the traditional school. There was also a trend for older students to be more flexible than younger, and boys more than girls.

The results seem to point to something in the schooling of these students that make one group more flexible and fluent in thinking of alternatives. This flexibility seems to be one kind of cognitive skill that needs to be fostered in students if they are to adapt to the needs of a modern technical society. Results, we believe, are related to our earlier stated hypothesis concerning information processing and rote learning. Children in the experimental school came from similar social backgrounds as those in the traditional school, but in their classes they were much more exposed to more

FIGURE TWELVE

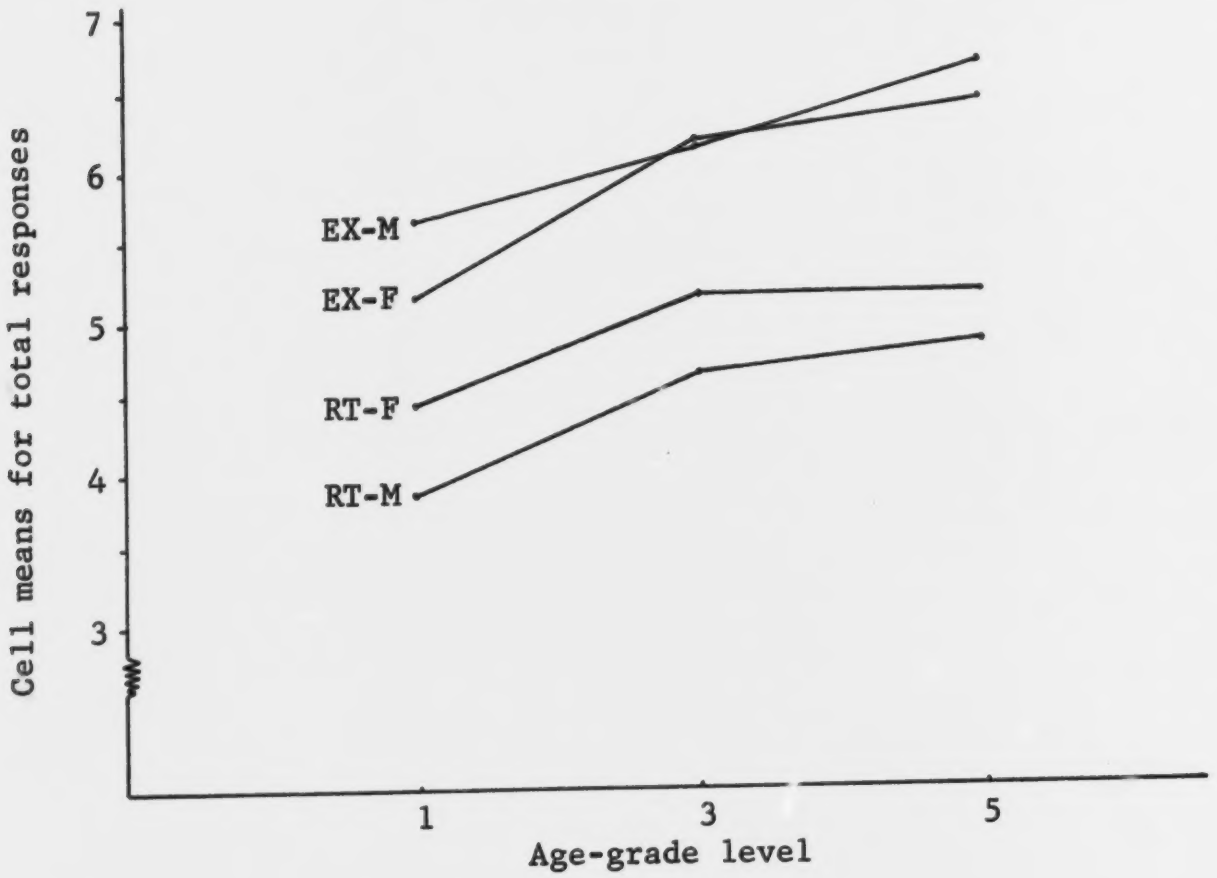
Per cent of non-common responses for two groups of primary students on alternative uses task, according to age, group and sex



Legend:
EX-M: Experimental male group
EX-F: Experimental female group
RT-M: Rote male group
RT-F: Rote female group

FIGURE THIRTEEN

Cell means for total responses for two groups of primary students on alternative uses task, according to age, group and sex



Legend:
EX-M: Experimental male group
EX-F: Experimental female group
RT-M: Rote male group
RT-F: Rote female group

forms of information. These students use textbooks through all of their school years (most of these available from the Ministry of Education through the Regional Textbook Program for Central America); they have games and puzzles to learn reading and math in the early years; they have a library (opened in March, 1969); teachers encourage questions and active student participation. In short, students seem to be exposed to a wider range of information sources and are encouraged to process and reconcile these various sources.

In summary, we have found that Salvadoran children generally follow an age growth pattern in the development of cognitive skills. As they grow up, they tend to use more abstract classifications and succeed better at finding superordinate categories to group a variety of objects. They also show some increase in the ability to think flexibly, to come up with alternatives for the use of common objects. But these age trends are greatly modified by the social and school environments from which the children come. Illiterate children from the campo show little progress over six or seven years in these abilities, rural schoolchildren lag far behind their city counterparts, and rote school students seem to be hindered in both their fluency and flexibility by what we have called a single-source information system. Cognitive growth is not automatic. If Plan Basico students are to take full advantage of the new system of instruction, they must be prepared at school and at home with increased forms of information, more active ways of learning, the availability and motivation to use books, mass media, and the environment itself to learn from.

III. Student learning during the first year with television

A. Statistical profile of students in the study

The major part of our research concentrated on our sample of 48 first-year Plan Basico classes (seventh grade) in 42 schools in El Salvador. Although four of these classes were from private schools using ITV, we will ordinarily be reporting results from the 28 public Plan Basico schools with ITV, the four control classes, or the 12 traditional classes, also from public schools.

One thing made abundantly clear in all the data is that the seventh-grade students whom we studied are an elite group of the population. This is not surprising when we consider that they are sifted through a school system that has a high dropout rate. If we assume that a considerable per cent (some people say as high as 20 per cent) of school-age children do not enroll in primary school at all, and that graduates of the primary system in 1968 represented only 26 per cent (or 31,586) of the original class enrolled in 1963 (121,328), and further that only 19,759 students were enrolled in first-year Plan Basico in February of 1969 (or about 16.2 per cent of the original first-grade enrollment in 1963), then we can realize how select a group we are dealing with.[1] We do not have to look around for the reasons why there is such a small number of students in secondary. It is expensive to go to Plan Basico, even when tuition

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[1] Information from Memoria de las labores del Ministerio de Educación, 1968-1969, p. 136.

is low. In many cases students must supply a desk, uniforms, and all academic materials (including paying a fee to take all end-of-year tests). For families who spend most of their earnings on the day that they receive them, just to buy food, and in a country whose per capita income is only about $250.00 per year, school expenses become an impossible obstacle for the majority.

A single example may indicate the socioeconomic level of the students we are dealing with. In our sample, 44 per cent of the public school students reported having a television set in their homes. According to Unesco figures[1] for 1967, there were about 10 per cent of families with television sets in their homes. Even if this figure were slightly higher in 1969 when we drew our sample, we can see that a group with 40 per cent owning television sets is by no means an average one for El Salvador.

This is not to say that among students who do attend Plan Basico there is a single socioeconomic class. First, there are many private schools (46 per cent of all Plan Basico students enrolled in 1969 were in private schools). These private schools vary greatly in quality -- some being the elite private schools mostly under Church auspices, but others are the commercial secondary schools that have grown up in response to parents' demands and the lack of enough public ones. One phenomenon that the increase of good public secondary schools will have in the next few years will be the gradual decline

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[1] Unesco Statistical Yearbook, 1968.

of the private commercial school. In any case, private schools attract many students whose parents can afford to pay tuition costs. They are, however, almost always found in cities. If rural parents wish to send a child to a school of this sort (or for that matter to one of the better public schools), the child must board with relatives in the city. The research only peripherally considered private schools because their economic selectivity for most purposes makes them non-comparable to public school students.

Thus within the public Plan Basico schools, the variability of student background is limited. The wealthiest children are sent to private schools, and the poorer ones, the large majority of the population, do not get as far as Plan Basico. About this middle segment of student population, the data reveal a good deal. On the following pages, we shall trace their profile, concentrating on those features which are most often related to educational attainment. These data are from two surveys, one made at the beginning, the other at the end of the first school year. A complete translation of the student questionnaire is given in Appendix B.

B. Socioeconomic status (SES) variables

The most striking thing about first-year Plan Basico students is that they are widening the differences between their parents and themselves. The demands of the students on the system to provide more education have increased dramatically since the time their parents were of school age. As we see in Table two, over 75 per cent of the

students just by being in seventh grade have already surpassed the terminating educational level of either of their parents.

TABLE TWO

Distribution of Level of Parents' Education: Total Sample

Level of education achieved	Father's education	Mother's education
Without primary	13%	16%
Part of primary	32	36
Finished primary	28	32
Plan Basico	12	6
Short Course (commercial)	10	8
Bachillerato (univ. prep.)	4	2
University	1	0

Only about one per cent of their fathers and virtually none of their mothers went to the university. Nearly all of the parents who did continue beyond primary went no further than Plan Basico.

This expansion of the educational system is leading to an asymmetry within the traditionally hierarchical family. On a clearly identifiable scale, years of schooling, in an area to which at least some elements of the culture attribute high status, children are ahead of their parents. In the first year there was no research done to measure directly the effects of this asymmetry, but in the coming years we hope to examine this potential source of major change.

Another useful discriminator of socioeconomic status is the claimed presence of television in the home. (N.B. Of course, this is a self-report, and may be an exaggeration; nevertheless we have ample information to indicate that it is not greatly distorted.) In a country with a low per capita income and high import duties, only relatively wealthy families can purchase a television set that would take about half the annual income of an average family. With the added assumption that those who can will buy a television set, possession of a set becomes a useful indicator of socioeconomic level. As reported earlier, some 44 per cent of public school seventh-grade students indicated they had a television receiver in their homes at the end of the school year. This compares with some 37 per cent who said so at the beginning of the school year. This increase is close to what might be expected if the Unesco estimate of an increase of about ten thousand sets a year is to be believed.[1]

The availability of other media, such as radio, does not discriminate different socioeconomic levels. Over 90 per cent of all students claimed radios in their homes (hardly surprising when one sees Japanese transistors costing less than $4.00 apiece). Again Unesco figures confirm our own: They report about 400,000 receivers in 1967 or about 80 per cent of all Salvadoran families with radios (if radios were distributed one per family). More than 85 per cent said they had books and newspapers in their homes.

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[1] Unesco Statistical Yearbook, 1968.

Father's occupation, which frequently is a good SES predictor, had a poor distribution in our sample. Only 17 per cent of students' fathers held jobs which required secondary or higher education. Since father's occupation responses were scaled on the basis of the education needed to fill the job, the small number of men who were not in the lowest category (jobs requiring primary or less) made this variable less than powerful as an SES predictor. But since occupation correlated highly with father's education ($r = +.56$), a better distributed variable on the same dimension, education rather than occupation was used as an outcropping of SES.

All of the previously mentioned variables are related to the location of a student's school in urban, semi-urban, or rural areas. These categories of urbanization were defined as follows: urban -- schools in San Salvador and suburbs; semi-urban -- schools in towns on paved roads; rural -- schools in towns on dirt roads off the main connecting links. The relation of SES to urbanization, as most previous studies have shown, indicates that rural students are relatively less well off than students from the urban area.

The relationship of urbanization to each of our SES predictors, father's education, mother's education, and television in the home, are practically identical. As we see in Table three, the highest percentage of better educated parents and those with television in the home, was found in San Salvador. In both the semi-urban and rural areas, percentages were lower and about equal. We should note that the intermediate or semi-urban group was closer to the rural group

in SES variables but in ability, learning and aspiration were much closer to the urban group.

The pattern of relationships of sex to SES distribution, as Table three shows, is quite different in each of the urbanization subcategories. In San Salvador, and in the semi-urban areas, sex of the student makes very little difference in predicting his socio-economic class. However in the rural areas, a very different pattern appears. Girls in rural schools have higher SES levels than boys. Thus, for example, more than twice as many rural girls than rural boys claim TV in their homes (50 per cent vs. 23 per cent). This same is true for parents' education. This suggests that families in rural areas who do not have a great deal of money are likely to send a son rather than a daughter to secondary school. Better off families can afford to send both and do so.

Whether it is a city-rural difference in perceived value of education that keeps lower SES rural girls home while their urban counterparts are sent to school, or whether it is a relatively greater need for rural girls at home that keeps them there is not clear from the data. Direct examination of parents' values must be studied before any determination can be made. According to reports from some Salvadorans this difference in educational value is rooted in a negative evaluation of education for girls. It is said that there are fathers who refuse to let their daughters learn to read, believing that a girl's only use for reading is to receive messages from boyfriends, an ability they wish to discourage!

TABLE THREE

Distribution of SES variables according to urbanization level

		Urbanization level		
1.	Level father's education	Urban	Semi-urban	Rural
	He has more than primary	42%	23%	20%
	He has primary or less	58%	77%	80%
2.	Level mother's education	Urban	Semi-urban	Rural
	She has more than primary	22%	12%	15%
	She has primary or less	78%	88%	85%
3.	Television ownership	Urban	Semi-urban	Rural
	Family has a TV set	59%	40%	36%
	Family does not have TV	41%	60%	64%

TABLE FOUR

Distribution of SES variables according to sex with urbanization as a second control variable

		Urbanization level					
		Urban		Semi-urban		Rural	
1.	Level father's education	Male	Female	Male	Female	Male	Female
	He has more than primary	46%	39%	22%	23%	15%	25%
	He has primary or less	54%	61%	78%	77%	85%	75%

		Urban		Semi-urban		Rural	
2.	Level mother's education	Male	Female	Male	Female	Male	Female
	She has more than primary	25%	20%	12%	13%	9%	21%
	She has primary or less	75%	80%	88%	87%	91%	79%

		Urban		Semi-urban		Rural	
3.	Television ownership	Male	Female	Male	Female	Male	Female
	Family has a TV set	60%	59%	37%	45%	23%	50%
	Family does not have TV	40%	41%	63%	55%	77%	50%

C. Distribution of media experience

The question in this section is no longer, as it once might have been, who has experience with media. It is now which media people have experience with. In The Passing of Traditional Society, Daniel Lerner reported that among his Middle-Eastern sample, possession of a radio was a good indicator of modernization. This is no longer true. In this day of the transistor, over 90 per cent of our sample report that a radio is found in their homes. Unesco reports that in El Salvador radios numbered 21,000 in 1954, and 396,000 in 1965, an increase of about 20 times in eleven years.[1] The cheap transistor has been a revolutionary factor in the spread of mass media within a decade. Classroom television is thus not the first glance that any of our students have outside of their villages. In addition it is worth recalling that El Salvador is a very small country. It is no more than a half day's trip by public bus from the most rural town into San Salvador and considerably less into most of the department capitals. Nearly everyone has relatives in one or another of the cities. Thus it is quite likely that unlike rural children in larger developing countries with less access to cities, many rural children in El Salvador have some urban experience and certainly considerable experience with radio.

Seventy per cent of our sample claim to listen to the radio at least one hour a day. Over 30 per cent claim to listen more than

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[1] Unesco Statistical Yearbook, 1968.

three hours a day. Relatively more radio listening is done in the rural areas. There, nearly 40 per cent listen over three hours per day; in San Salvador only 22 per cent claim such a high rate.

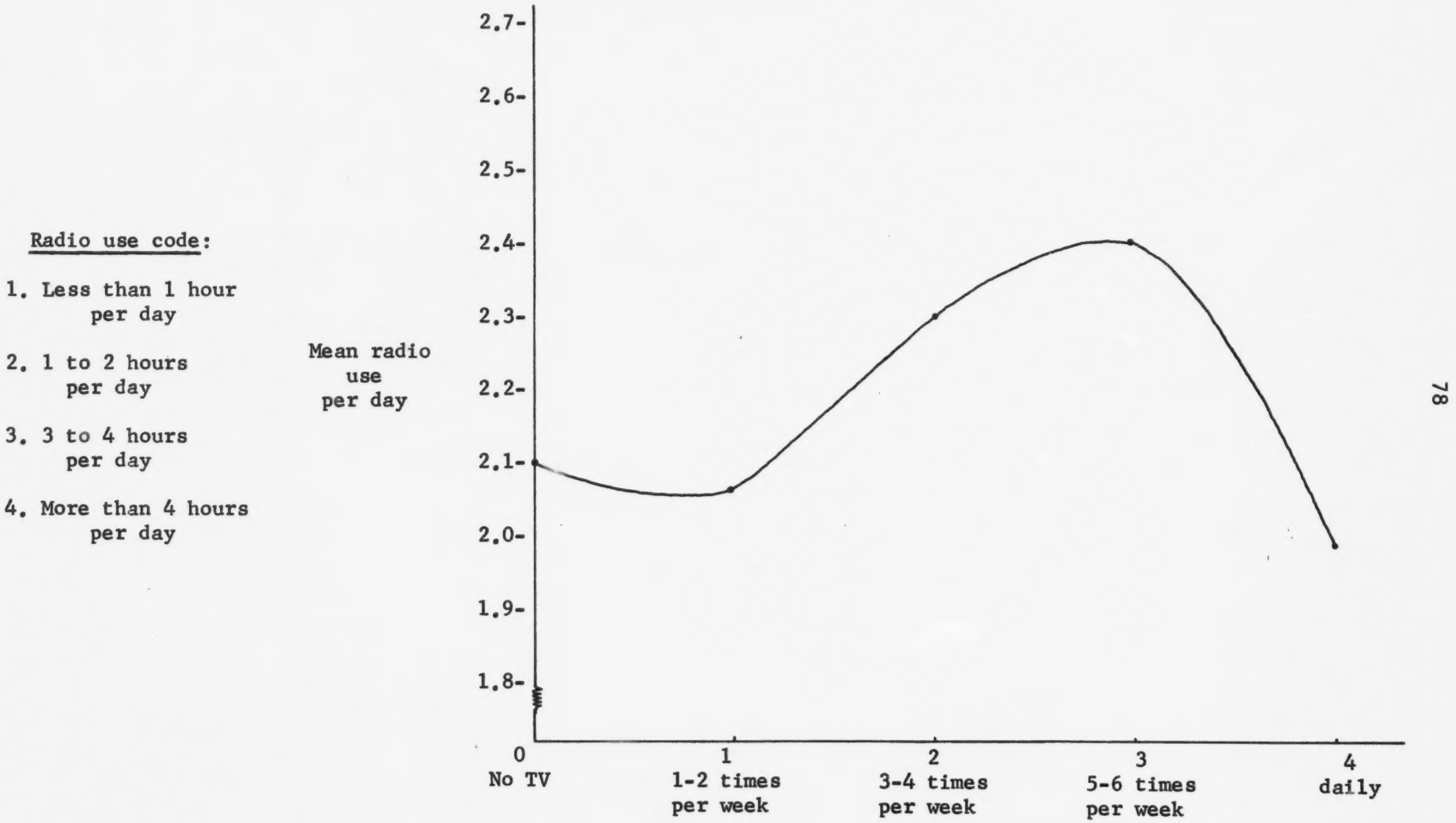
The relationship of radio listening to urbanization and to other socioeconomic variables is a most interesting one. In past research, a strong positive relationship usually appeared (as SES goes up so does radio use). Such a relationship is found in our data for television use, for newspaper use, for magazine use, and for book use when they are related to level of father's education. It does not exist for radio use, or at least not completely.

At the lower ends of SES variables, radio use increases as SES goes up. However at the highest levels of SES, a sharp decrease in radio use occurs. This is apparently caused by the increasing availability of television to wealthier children. As they watch more television at high levels of television watching, there is less time or less need for listening to radio. It is only at the highest socioeconomic levels that this free availability of both broadcast media exists. It is only at these levels that a choice is really made between them. At lower levels, both TV use and radio use are increasing in like fashion. Media-use saturation, defined as the level at which an increase in the use of one medium leads to decrease in the use of others, is beginning to appear at the highest SES levels of the public school population. Figure fourteen illustrates the curve of the means of radio use at each level of television use.

Radio use moves smoothly upward from the twice-a-week-or-

FIGURE FOURTEEN

Distribution of radio use means according to level of TV use



fewer TV viewers to those who watch three or four and then five or six times per week. However, when we reach the daily television viewers, a sharp drop in radio use occurs. In fact this group listens to less radio than any other group. That the drop should occur at this time makes sense. Seventy-eight per cent of those who watch daily television claim to have television sets in their homes compared to less than 50 per cent of those who watch TV less than daily.

All other media availability and use data follow the expected patterns of positive and sometimes strong relationships with SES variables. Father's education, mother's education, and TV availability all predict higher TV use, book use, magazine use, and newspaper use. In addition, it can be seen that the tendency to have and to use any one medium is associated with the tendency to have and to use all other media, except radio. By and large the data on radio, book, and newspaper availability are of little predictive use since all these are possessed by more than 90 per cent of the population.

By way of summary, we see in Table five the relationship of each medium with the five factors we have discussed in this section: urbanization and sex and the three SES predictors of father's education, mother's education, and television ownership.

D. Ability tests and relationships to other student factors

General reasoning ability and reading ability tests[1] were

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[1] Habilidad General (level 3) and Lectura (level 3) distributed by Guidance Testing Associates of Austin, Texas.

TABLE FIVE

Correlation between media use variables and SES, sex and urbanization variables
(N.B. Correlations without a sign are positive.)

	TV Use	Radio Use	Newspaper Use	Magazine Use	Book Use	Movie Use
Urbanization[1]	.09	-.15	.07	.06	.12	.06
Father's education	.15	-.02	.16	.06	.16	.23
Mother's education	.20	-.03	.07	.09	.19	.19
TV ownership	.52	-.20	.14	.07	.12	.07
Sex[2]	-.03	-.18	-.05	.02	.04	.07

1. Urbanization code: Urban: high
   Rural: low

2. Sex code: Female: 0
   Male: 1

given to all the students in our study sample (N = 1814) in April-May, 1969. Similar tests[1] were administered at the beginning of the 1970 school year with both the seventh- and eighth-grade sample, but we are not yet in possession of the new scores and cannot assess gains. Both reasoning and reading tests had three equally weighted parts: The general ability test had verbal, nonverbal, and numerical sections; the reading test had vocabulary, speed-comprehension, and comprehension sections.

Although these tests have been normalized for parts of the United States and Puerto Rico, no norms have yet been developed for El Salvador. However, it would not be surprising to find that on the average Salvadoran children do not do as well as American Spanish-speaking children. The students in our study had little or no experience with tests of this sort before. Cultural biases in the tests may have offered additional obstacles although these tests had been developed in a Spanish version which has received wide testing in the United States and Latin America. (For example, the stress on fractions in the numerical section of the general ability test was keyed to American primary rather than Salvadoran primary arithmetic.) Finally the tests were less tests of intellectual capacity than of basic reasoning and reading skills. As such they are largely dependent on prior education, and it is just this lack of quality in that education to which the Educational Reform is directed.

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[1]Both seventh- and eighth-grade classes were given level 4 of the series.

When we look at the reading and general ability scores within El Salvador and compare given population sectors (i.e., urban and rural), we are examining not so much intelligence as previous primary education within those sectors. Scores do reflect intelligence but only when the opportunity to obtain basic skills is approximately equal among those compared.

In this section we describe the comparative skills brought by each sector of the population to the beginning of its Plan Basico course. In later sections, when we compare general ability and reading scores to achievement scores and other dependent variables, the importance of these skills, and the importance of different distributions of them within population sectors, will be clear.

As a general statement, if a Plan Basico student is male rather than female, if he comes from a city rather than a rural area, if his parents are well educated rather than poorly educated, he is likely to bring with him to Plan Basico more of the basic skills which are a key to doing well. Table six presents a summary of the correlations among the two ability tests and their subscores with the variables mentioned in the previous section: urbanization, sex, parents' education, and TV ownership.

1. Urban-rural differences in abilities. Table six shows that there is a negative relation[1] for our public school sample between

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[1]Concerning significances of various correlations and differences among means for this and subsequent tables, see the Technical Section, Appendix A.

TABLE SIX

Correlations of general ability and reading test scores
with background variables
(N.B. Correlations without a sign are all positive.)

	General Ability Test				Reading Test			
	Verbal	Non-verbal	Numeric	Total	Vocabulary	Speed Compreh.	Comprehen.	Total
Urbanization[1]	-.01	-.14	-.04	-.19	-.18	-.06	-.15	-.17
Father's education	.07	.17	.10	.16	.12	.06	.05	.09
Mother's education	.15	.12	.10	.11	.15	.09	.07	.10
TV ownership	.06	.05	.08	.08	.06	.11	.01	.02
Sex[2]	.04	.07	.09	.13	.15	.05	.14	.20

1. Code for urbanization: urban: 1
semi-urban: 2
rural: 3

2. Code for sex: female: 0
male: 1

living in a rural area and getting a high total score on the general ability test (r= -.19). City students as a rule get higher total scores. On subscores, the urban-rural difference is practically zero on the verbal section while it is quite sharply different on the non-verbal or abstract reasoning section. There is a slight advantage for urban students on the numeric section (although it was the lowest score of the three sections for all groups). That verbal scores should show little differences between urban and rural groups gives some support to our hypothesis that rote learning is primarily verbal and thus may provide some skill for fill-in type tests, but not in writing and self-expression. Vernon, in his book, Intelligence and Cultural Environment, cites cases of African and Jamaican students scoring quite well on verbal tests in English (not their first language) but doing relatively poorly on perceptual tests that were pictorial and nonverbal. The nonverbal section of our ability test consisted wholly of analogies and classification tasks that were based on pictures and geometric figures. It may not be that the material was culturally biased, since urban students did rather well, but that rural students simply have little practice with any kind of pictorial material in their schoolwork.

Reading scores reflect a similar pattern with urbanization as did general ability. Table six shows a negative relationship between living in the country and scoring high on the reading test as a whole (r= -.17). Vocabulary seems especially vulnerable among rural children (r= -.18). The section that tested more for speed of

comprehension seemed to give less advantage to the urban student, perhaps because the passages in this section were relatively brief and rural students were able to look back quickly and check on answers. On the straight comprehension section they again fell behind; long and more complex passages were the rule here. We should not see any contradiction between rural students doing well on the verbal section of the general ability test and poorly, by and large, on the reading test. If our hypothesis is correct about the kind of rote learning that is common in rural classes, these students' ability to handle a few words and fill in the blanks (on the sentence-completion part) or match words may be helped by their copy-and-memorize method. But reading and handling words for comprehension in longer and more complex situations may be something the average rural student has not learned to do. With few books available, a rural student has little or no opportunity to develop reading skills through practice and his vocabulary fails to grow beyond what the teacher uses in dictating classes.

2. Sex differences in abilities. One of the most consistent and striking findings in our first-year testing is how boys do significantly better than girls on all tests we gave, both ability, alternative uses, and achievement tests. It is true that girls are always a slight minority in the schools and this increases as students get higher in the educational pyramid. Girls represented 47.3 per cent of primary enrollment at the beginning of 1969; 45.8 per cent of Plan Basico in the same period; and 39.7 per cent of bachillerato.

However, in reported dropouts for the last ten years, girls have a consistently lower rate of school-leaving. Moreover, in statistics for repeaters (those failing and repeating a grade), the percentage of girls repeating for both primary and Plan Basico in 1968 was exactly proportional to their enrollment levels. It does not seem, then, that girls do any worse in the school system, and yet they are consistently behind boys in our tests.

If we make cross-cultural comparisons, we find the opposite results in the United States. Through grade school (usually through eight grades), girls are reported to do better than boys on certain language skills (e.g., grammar, spelling, reading), and do equally well on general reasoning and math skills. Later, in high school, it is true, boys do better in mathematics, but there is no difference on general ability tests.[1]

It seems strongly probable that sex differences on these academic subjects both in the United States and in El Salvador are related to cultural values. In male dominant cultures, the development of cognitive skills is more important to boys who have greater career demands for such skills. Girls do not achieve in these areas because they have been told -- at least indirectly -- that they are not expected to do so. If we look at careers ordinarily open to women in such cultures, the latitude is greatly restricted. In our

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[1]Cf. Eleanor E. Maccoby (ed.), The Development of Sex Differences. Stanford: Stanford University Press, 1966.

sample, we found that most girls chose as a career to be a commercial secretary, a job not requiring more than a high school education. If the Educational Reform is to make use of the talent it has available in its students, plans must be made to create a wider scope for women's careers. We plan to continue study in this area to understand better how attitudes develop that curtail greater academic achievement in girls.

3. Parents' education and general ability. Students whose parents are relatively better educated do better on both the general ability and the reading tests. We note in Table six a positive correlation (r= +.16) between father's education and general ability; the same holds true for mother's education and general ability (r= +.11). Correlations on the reading test totals were lower (father's education, r= +.09; mother's education, r= +.10). The ownership of a television set did not predict much in either test.

It is not difficult to understand how well-educated parents might encourage students in skills that show up on ability and reading tests. For one thing, they are also generally better off and can provide a greater variety of stimulus materials: books, magazines, travel, and conversation about subjects relevant to schoolwork. Although almost all students claimed to have books in their homes, a separate question on their use was correlated with father's education (r= +.16) and mother's education (r= +.19). It is an attitude

that is developed, a value of education that helps to get children to want to read and study more. Later we will see that a student's desire for more education is also related to how much education his parents have.

E. Student learning and achievement tests

1. Introduction

Our investigation of students' learning over the first year consisted of three achievement tests in mathematics, science, and social studies given to all groups at the beginning and the end of the school year. A careful study of results permits us to make two important statements, First, there is a large and unmistakable advantage to having been in a television class. TV students learned a great deal more than did students in traditional (old system) classes. Secondly, everyone in the television classes, whether rich or poor, from the city or the country, male or female, with high ability or not-so-high ability, gained more or less the same number of points on the learning tests. There have been fears that television instruction would be non-egalitarian in its successes; that only children in the cities, or children of well-educated parents, would benefit from it. From our first year of research we have strong evidence that this is not so.

The achievement tests were developed by the Educational Testing Service of Princeton, New Jersey in collaboration with members of the research and evaluation group and in consultation

with the subject matter specialists of the ITV section of the Ministry of Education. The revised curriculum in the three areas formed the base for the questions in the tests.

Since each test was designed to cover the year's material in the subject, it was reasonably assumed that most of the 50 questions on each test would be unanswerable at the beginning of the year. This proved to be the case in mathematics, and to a lesser extent in science. However, in social studies the beginning-of-the-year scores averaged 26.5 (or 53 per cent of questions answered correctly). This would indicate that material taught at this level is in large part repetitive, and that the traditional school system was reasonably proficient in preparing students in this area. These high beginning scores did cause something of a problem in our analysis as some of the tables below will indicate. Since many students had begun with high scores, a ceiling effect appeared to limit how much these upper-level students advanced.

A second problem with the achievement tests was the students' lack of experience with standardized multiple-choice tests. One important aspect of doing well on such tests is knowing how to take them.[1] If it can be assumed that test-taking ability improved over the course of the year, then a competing hypothesis for any small gain scores is that they represent no gain in learning the subject

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[1]Cf. L. J. Cronbach. Essentials of Psychological Testing (Third Edition). New York: Harper and Row, 1970.

matter but only a gain in learning to take this kind of test. This problem becomes especially clear in examining beginning-of-the-year test scores in mathematics.

On any 50-question test with four alternatives for each question, the usual estimate of a no-knowledge mean chance score would be 12.5. This assumes that everyone tried to answer all 50 questions, and that any of the alternatives to each question are equally likely to be guessed. To the extent that fewer than 50 questions were tried, the expected no-knowledge score would be lessened proportionally. To the extent that any of the incorrect alternatives on a given question could be eliminated, so that a guess could be made among fewer than four alternatives, the expected no-knowledge score could be increased.

On the beginning-of-the-year math test, the overall average was less than 12.0, clearly less than the usual chance score. If all students had merely known how to take tests a little better, and blindly guessed at all 50 questions, the average score would have been higher than it was. As it happened, many students went question by difficult question, and when time had run out they still had not given answers to half or more of the 50-question test. By the end of the year, assuming some test-taking ability had been gained, and more questions were answered, chance scores would have been higher. Thus apparent gain in knowledge would have been in fact nothing but a gain in test-taking ability. There is no way to estimate true chance scores, because we cannot know how many alternatives a student

was able to eliminate before guessing on given questions. At best we can only keep this difficulty in mind as a possible rival hypothesis to a supposed gain in knowledge.

A third problem with the achievement tests is that they were developed for the television classes' curriculum. One important aspect of the Educational Reform is an attempt to make a thorough-going revision of the traditional curriculum in all areas. As a result, many of the topics considered in the television classes were quite different from those usually taught in traditional classrooms. Therefore traditional classes could not be expected to know many of the items on the tests developed for the new curriculum. It would not have been unreasonable to claim that the large advantage in learning attributed to the Reform is in fact due entirely to the tests being geared only to the Reform classes.

This objection could be given a direct test. The subset of questions on each test, common to both new and old curricula, was separated from the subset geared particularly to the television curriculum. As Table seven indicates, television classes had a clear advantage on both subsets of questions on all tests. On the math exam, the advantage of TV students over traditional students on questions geared to the TV curriculum was slightly greater than for questions both curricula had covered. On the social studies exam the difference was again slight, but this time the TV students had a larger advantage on the questions covered by both curricula.

On the science test, there apparently was some greater effect

TABLE SEVEN

End-of-year achievement differences:
television and traditional classes

This table gives average per cent additional correct answers by TV students as compared to traditional students.

a) questions common to both TV and traditional curricula

b) questions keyed to the TV curriculum

c) all 50 questions on each of the three tests

Subject	Common Questions		TV Questions		All Test Questions	
	No. of questions	% more by TV	No. of questions	% more by TV	No. of questions	% more by TV
Mathematics	30	25%	20	28%	50	27%
Social Studies	22	18	28	12	50	15
Science	18	15	32	24	50	20

of the tests being developed for the television curriculum, but even so the TV students had a clear if somewhat smaller advantage on the common questions as well as on the TV curriculum questions. In summary, the fact that the tests were developed for the television curriculum seems not to have been an important factor in determining the better performance of TV students.

Another objection might be made here that while the tests as a whole were good samples of the entire Reform curriculum, the subset of common questions was not a good sample of the traditional curriculum. Thus, if the traditional curriculum were focused entirely differently than the television curriculum, and the subset of common questions were peripheral to the main focus of the traditional system, they would not be a good test of the learning that was going on in the traditional classes. Just because questions are common to the two curricula is not evidence that they are equally central to these curricula. If the questions were more central to one curriculum than the other, quite possibly in favor of the Reform curriculum, then the students to whom the questions were more closely keyed would obviously do better. There is no way to estimate the issue rigorously with the data we have, but we recognize this as a possible limitation.

Because of the small differences in relative advantage on both subsets of questions, and the higher reliability of a 50-question test, all future comparisons are made on the basis of the complete tests. It will be worthwhile for the reader to keep in mind, however, the possibility that, at least for science, some additional advantage

accrued to the television classes because the test seemed more geared to their work.

2. Overall results: television, control, and traditional classes

As Table eight indicates, television and traditional classes had similar average scores on all achievement tests taken at the beginning of the school year. In all three subjects, traditional classes had a slight but not significant advantage. By the end of the year, television classes had forged well ahead. Both for the differences between the end-of-year test scores and for the differences between gain scores, the reform classes' advantage is significamt well beyond the $p < .001$ level. With the limitations outlined above in mind, we can say that students in Reform classes have learned considerably more than students in traditional classes.

There was a second broad question that we attempted to answer. It concerned how much more learning might occur in Reform classes that used television than in those with other aspects of the Reform but without televised instruction. In Chapter one, we have outlined the reasons why we placed our major emphasis on the Reform-traditional comparison. These should be kept in mind here.

Eight classes, two in each of four Plan Basico schools, were chosen to serve as experimental and control classes.[1] The four

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[1]Originally more control classes which were better distributed geographically were in the design, but limited numbers of retrained teachers and problems with having them assigned to certain schools reduced the number to four. We were quite aware that the experimental-control design took a lower priority to a number of practical administrative problems the Ministry faced at this point. The difficulty of field experimentation only comes home to a researcher in situations like this!

TABLE EIGHT

Mean scores in three subjects before and after the first year: television and traditional classes

Subject	Television classes	Traditional classes
Mathematics		
Mean score, February	11.79	12.22
Mean score, October	18.06	14.17
Gain	6.27	1.95
Social studies		
Mean score, February	26.55	26.82
Mean score, October	33.77	29.43
Gain	7.22	2.61
Science		
Mean score, February	17.82	18.47
Mean score, October	23.79	19.81
Gain	5.97	1.34

(Differences between classes on gain scores are all significant beyond the .001 level.)

control classes had retrained teachers, new curriculum, teacher guides, and student workbooks; in short, they had everything the Reform offered except for ITV itself. The four matching experimental classes in each school differed in having a television set in their rooms. Students were to be randomly assigned to either control or TV classes. This made it clear that the supposedly equivalent classes were simply not so. Covarying or controlling on general ability, or on any other variable, would not make satisfactory adjustments of the differences. It was certainly likely that if the classes were significantly different on the general ability means, they were also different on dimensions that we had not measured. Differences on these dimensions might clearly affect learning scores, and we would have been unable to control for them. Thus while general ability differences might have told us that the experimental and control classes were significantly different at the beginning of the year, they cannot be assumed to define completely the dimensions of that difference or how these might have affected learning.

Even if the randomization of the students had been successful, a second major problem which existed would make application of the findings to other situations illegitimate. The first aspect of this was that the teachers in the eight classes were not themselves a random sample of all Salvadoran teachers. The second aspect was that there was no possibility of assuring that control and experimental teachers were equal in their teaching abilities. Limitations of control over the situation by researchers did not allow for all of the controls one would have liked.

On the first objection, the teachers who taught in the 32 TV classrooms and the four control classrooms were on the whole highly motivated. Their attitudes toward ITV and the whole Reform were more positive than those of the teachers who took retraining courses after them. They were considered to be among the best teachers in the secondary school system.

Instructional television has been shown to be of minimum value when replacing a highly motivated and well-trained teacher. The best evidence from instructional television systems used in the United States is that televised instruction has little short-term learning advantage over good classroom instruction.[1]

It is, however, precisely because teaching skills are not widespread in El Salvador, that ITV was introduced into the system. In trying to assess the importance of television in the Educational Reform, one should not be comparing quite competent teachers with or without television, but rather the average teacher with or without television in his classroom. With a much larger sampling base (110 schools) and a larger number of control schools (seven), this is being better accomplished in the 1970 school year. The real test -- and perhaps the greatest advantage -- of television will come when primary schools get ITV and teachers are retrained through television.

On the second objection, concerning the inequality in ability

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[1]Cf. G. C. Chu and W. Schramm. Learning from Television: What the Research Says.

of control and experimental teachers, one control class teacher of math and science was extremely good. His students had the highest mean scores in both these subjects among the eight classes, although their mean score on social studies (taught by another teacher) was second lowest among the eight classes. When there is one such special case in an eight-class sample, it can cause serious problems for an experimental design. In fact, even had the students been properly randomized, the inability to randomize teachers, and the presence of a few particularly good teachers, would have made possible problematic inferences from experimental/control differences.

Despite this extensive list of limitations, there are certain conclusions that can be drawn from the experimental-control class results. They have little to do with the statistically significant findings from Table nine ("unadjusted figures" on the left side of the table). There we see that if the randomization could have been considered successful, TV classes had a significant advantage in social studies and there was no difference between the two groups in mathematics and science. If covariance analysis is done, controlling for general ability differences, as we see under "adjusted figures" in Table nine, social studies remains significantly in favor of TV, science shows a significant advantage for control classes, and mathematics scores are practically identical.

However, with all of the problems of randomization of students and teachers, these findings must be considered problematic and conclusions from them need to await better data, which we hope to collect over the next several years.

TABLE NINE

October test scores: television and non-television control classes

	Unadjusted figures		Adjusted figures	
	With TV	Without TV	With TV	Without TV
Mathematics	17.7	17.2	17.4	17.5
Science	22.4	23.3	22.0	23.7**
Social studies	33.1*	29.8	32.7***	30.2

(*Significantly different in favor of the classes with TV)
(**Significantly different in favor of the classes without TV)
(***Significantly different in favor of the classes with TV)

What is important is that control scores are in the same range as television scores and not in the same range as the traditional scores reported in Table eight above. Given good retrained teachers with high motivation and all the new teaching materials, students in classes without television seem to do more or less the same as students in classes with television.

This does not answer any of the more important questions concerning the separate effects of television within the context of the whole Reform. How important is television in the classrooms of less good teachers? How much if any of the rest of the Reform would have been instituted if it were not for the impetus of the central element, television? To what extent will the presence of televised instruction permit a rapid expansion of a school system which otherwise would have to wait until it could train many teachers over a long period? How many, if any, more students can be placed in a television classroom than can be placed in an ordinary classroom with no dilution of quality of instruction?

The goal of studying the specific effects of television in a controlled classroom situation is worthwhile. Many such experiments have been conducted in the past and a great deal of evidence has accumulated as the Chu and Schramm book, Learning from Television, demonstrates. But when we have matched or controlled for everything except the medium of instruction, we may be examining an unreal situation and one less important than others we might possibly study. Results of numerous experimental studies about the medium

of instructional television have shown almost an even split between television and rival methods like face-to-face teaching.

In a developing country, there are not only problems with control but of knowing where to look for effects. We have seen some of the larger, systemic effects that television may bring to a country if leaders are willing to accept the implications of the educational technology they are adopting. On a more specific level, we have noted the manner in which television and new teaching methods and materials may help to expand the information available to students and get them to process their own information from a number of different sources. And we believe that some evidence for this hypothesis is found in the fact that students from rural areas and relatively poorer families learn in television classes as well as their urban and better-off peers. This is an area where results of interest to El Salvador and other developing countries may be found.

3. Effect of background variables on learning

Besides the overall results of achievement testing, we also wanted to know what effect various background variables might have on learning from television. It seemed essential to examine whether children who live in cities, or children whose fathers were well educated, or children who came from wealthy homes, were able to take more advantage of the television system than were rural children, or poor children, or children whose fathers were less well educated. We were sure the Reform had succeeded on the average, but now it was

necessary to see how well it succeeded with students from different backgrounds.

One problem of this sort of analysis was the limited social differences among our students, which we noted in the statistical profile above. Public school Plan Basico students represent only a small sector of the population. The wealthy send their children to private schools, and the children of the poor drop out of school before the seventh grade.

Thus when we speak about the advantage of a child whose father is well educated in contrast to a child whose father is poorly educated, we should not overstate the differences in this variable. The range of father's education is quite narrow; 70 per cent had a primary education or less; most of the rest went through Plan Basico or a short business course. This range is not great enough so that we should expect to find the large differences in academic achievement that are commonly associated with socioeconomic inequalities.

Similarly, our measure of wealth, presence of a television set in the home, was not a great success as a predictor of achievement. Although it is a neat dichotomy, whose 60/40 per cent distribution should be easy enough to work with, the underlying continuum of wealth it represents is probably not that wide. The income differences between those who do have television and those who do not, although they do exist, are not large enough or important enough to give very much additional scholastic advantage to those who do have a wealth advantage.

On the other hand, having high general ability, being a boy, living in San Salvador rather than in a rural area, were all important factors in achieving higher scores on learning tests at the beginning of the year. How did the various subgroups do at the end of the year and how much were their gain scores? In Tables ten to fourteen, all five of these variables, general ability, urbanization, sex, father's education, and presence of a television set in the home, are analyzed for their effects on beginning and end-of-year and gain scores on all three achievement tests in traditional and reform classes separately.

We should note to begin with that the significance of differences in change scores is not reported. Since the mean beginning scores for different subgroups are often quite different, the difficulty of increasing those means a specific number of points might also be quite different. For example, moving from 11.0 to 17.0 on the math exam was probably less difficult than moving from 15.0 to 21.0. This has a good deal to do with different chance factors, although with higher scores ceiling effects might cause similar problems. In formal jargon, our scales are not perfectly interval. This violates the assumptions of the scientific logic which permits us to make inferences about significance of differences. This is not to say that no analysis whatsoever can be done, only that leeway be left for the probable differences in true gain scores that equally large obtained gain scores reflect. This matches our central concern -- not whether there is some slight advantage to one subgroup or another, but whether there is an important and clear advantage to a subgroup.

TABLE TEN

Effects of different levels of general ability on achievement of traditional and television classes: means and change scores

	Traditional		Television	
	General ability		General ability	
	Low	High	Low	High
Math				
February:	10.16	14.84	10.81	12.89
October:	13.06	16.37	16.91	19.91
Change:	2.90	1.53	6.10	7.02
Science				
February:	17.81	19.65	17.09	17.86
October:	18.72	22.90	23.57	26.41
Change:	.91	3.25	6.48	8.55
Social studies				
February:	25.22	29.26	24.55	28.78
October:	28.17	32.81	34.78	37.08
Change:	2.95	3.55	10.23	8.30

TABLE ELEVEN

Effects of different urbanization levels on achievement of traditional and television classes: means and change scores

	Traditional Urbanization			Television Urbanization		
	Urban	Semi-Urban	Rural	Urban	Semi-Urban	Rural
Math						
February:	14.68	11.12	11.57	12.56	11.36	11.77
October:	16.67	14.24	14.13	18.91	18.37	17.36
Change:	1.99	3.12	2.56	6.35	7.01	5.59
Science						
February:	20.26	17.15	18.87	19.46	17.29	17.16
October:	24.41	19.84	19.81	26.16	24.46	24.46
Change:	4.15	2.69	.94	6.70	7.17	7.30
Social studies						
February:	29.32	25.53	26.28	25.94	26.67	26.93
October:	33.56	29.38	29.76	37.09	35.89	36.13
Change:	4.24	3.85	3.48	11.15	9.22	9.20

TABLE TWELVE

Effects of sex on achievement of traditional and television classes: means and change scores

	Traditional		Television	
	Sex		Sex	
	Male	Female	Male	Female
Math				
February:	13.47	10.95	11.51	12.17
October:	15.80	13.55	19.02	17.36
Change:	2.33	2.60	7.51	5.19
Science				
February:	20.00	17.00	18.35	17.07
October:	22.36	18.56	25.52	23.62
Change:	2.36	1.56	7.17	6.55
Social studies				
February:	29.30	25.10	27.57	24.85
October:	34.29	27.05	36.80	34.50
Change:	4.99	1.95	9.23	9.65

TABLE THIRTEEN

Effects of different levels of father's education on achievement of traditional and television classes: means and change scores

	Traditional		Television	
	Father's education		Father's education	
	Primary or less	More than primary	Primary or less	More than primary
Math				
February:	12.34	12.36	11.47	12.70
October:	15.02	14.25	18.19	18.36
Change:	2.68	1.89	6.72	5.66
Science				
February:	19.07	17.60	17.44	18.92
October:	20.36	21.65	25.46	25.35
Change:	1.29	4.05	8.02	6.43
Social studies				
February:	27.01	27.36	26.20	27.55
October:	30.77	29.63	35.99	35.51
Change:	3.76	2.27	9.79	7.96

TABLE FOURTEEN

Effects of ownership of a television set on achievement of traditional and television classes: means and change scores

	Traditional Ownership		Television Ownership	
	TV in home	No TV in home	TV in home	No TV in home
Math				
February:	13.00	11.93	12.23	11.47
October:	15.39	14.42	17.62	18.86
Change:	2.39	2.49	5.38	7.39
Science				
February:	19.17	18.36	18.37	17.43
October:	20.19	21.03	24.21	25.38
Change:	1.02	2.67	5.84	7.95
Social studies				
February:	27.86	26.62	26.12	26.87
October:	30.89	30.09	35.29	36.29
Change:	3.03	3.47	9.17	9.42

The same basic pattern appears in all the tests for all five variables. TV mean gain scores on all variables are larger than those of any of the traditional classes. Thus even the group of the television classes low in general ability has clearly higher gain and final test scores than the high general ability group in the traditional classes. Girls in television do better than boys in traditional classes. Rural students in television classes have higher gain scores than urban children in traditional classes. Students in television classes whose fathers are poorly educated do better than students in traditional classes whose fathers are well educated.

We should recall at this point the observation we made at the beginning of the learning section where we compared students on a subset of questions common to both reformed and traditional curricula. We found (cf. Table six) that on these questions, as well as on those more specifically geared to the Reform, television classes had about 20 percent higher final scores than did their traditional counterparts. As we pointed out earlier, there are obviously many ways to explain these results, including a Hawthorn effect surrounding a new, attention-getting technology. We expect to follow these classes for several more years and make other comparisons with more seventh-grade classes in the 1970 school year to see if these differences are maintained.

If we look only at the television part of the five preceding tables, we will note some patterns of difference that are consistent over all three subject matters. For example, in Tables thirteen and fourteen, we find that students whose fathers had only primary or less

education as well as those whose family did not own a TV set did consistently better on gain scores than did students with better educated fathers or a TV set at home. The disadvantaged students start behind but gain more during the year. It is difficult to explain this finding. Perhaps students from poorer and less well-educated families have greater incentive or perhaps they find greater stimulation to learn from televised instruction.

Both the urbanization and general ability variables show mixed results among television students. There is no consistent advantage on gain scores for urban over rural students, nor even of high general ability over low. The sex difference in television classes indicates that on final test scores boys do consistently better than girls on all three subject matters, but girls do have a higher gain score in social studies.

Another major question of our research was to ask whether the achievement gaps between the advantaged and the disadvantaged were being closed, further opened, or maintained under the Reform. By and large, the evidence on this is not clear. Differences in gain scores among various subgroups within the television system are not nearly so large as those that exist between traditional and television subgroups. As we have noted above, significance figures would not be appropriate here.

What we offer below is only tentative information about what seems to be occurring. It is meant to guide future inquiry rather than state categorically what has happened in the first year of the

Reform. The area is so essential, however, that we felt some effort had to be made to report the little that has been found.

In Table fifteen we have given a summary of the findings from the preceding five tables for the television groups. These are only approximations of how much television instruction seems to have helped open or close the gaps for groups that had been at a disadvantage in ability and beginning achievement tests for reasons of economics, family background urbanization, or sex. There are obviously other ways of estimating the "gap-closings" from the data presented in Tables 10-15. We tend to interpret these findings with some optimism but await further data before making any conclusions about the effect of television in changing traditional barriers to academic achievement.

IV. Affective change in students: attitudes and aspirations

A. Attitudes toward instructional television

Another major area considered in both beginning and end-of-year questionnaires was student attitudes toward instructional television.[1] Figure fifteen provides a full picture of the results.

There were eleven questions designed to get at various aspects of instructional television; six were phrased so that agreement reflected a positive attitude toward ITV; five were phrased so that agreement reflected a negative attitude.

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[1]See Appendix B, questions 9-19, for a translation of attitude questions, or Figure one for the same thing.

TABLE FIFTEEN

Summary table of "gap-closing" for achievement mean scores among television classes on five variables

	General ability	Urbanization[1]	Sex	Father's education	Television in the home
Math	SAME	///	OPENED	CLOSED	CLOSED
Science	OPENED	SAME	SAME	CLOSED	CLOSED
Social studies	CLOSED	///	SAME	CLOSED	///

Legend: /// : The supposedly advantaged group had less than a point advantage at the beginning of the year and so no comparisons are made at the end.

SAME: The gap was not changed by more than one point on mean scores.

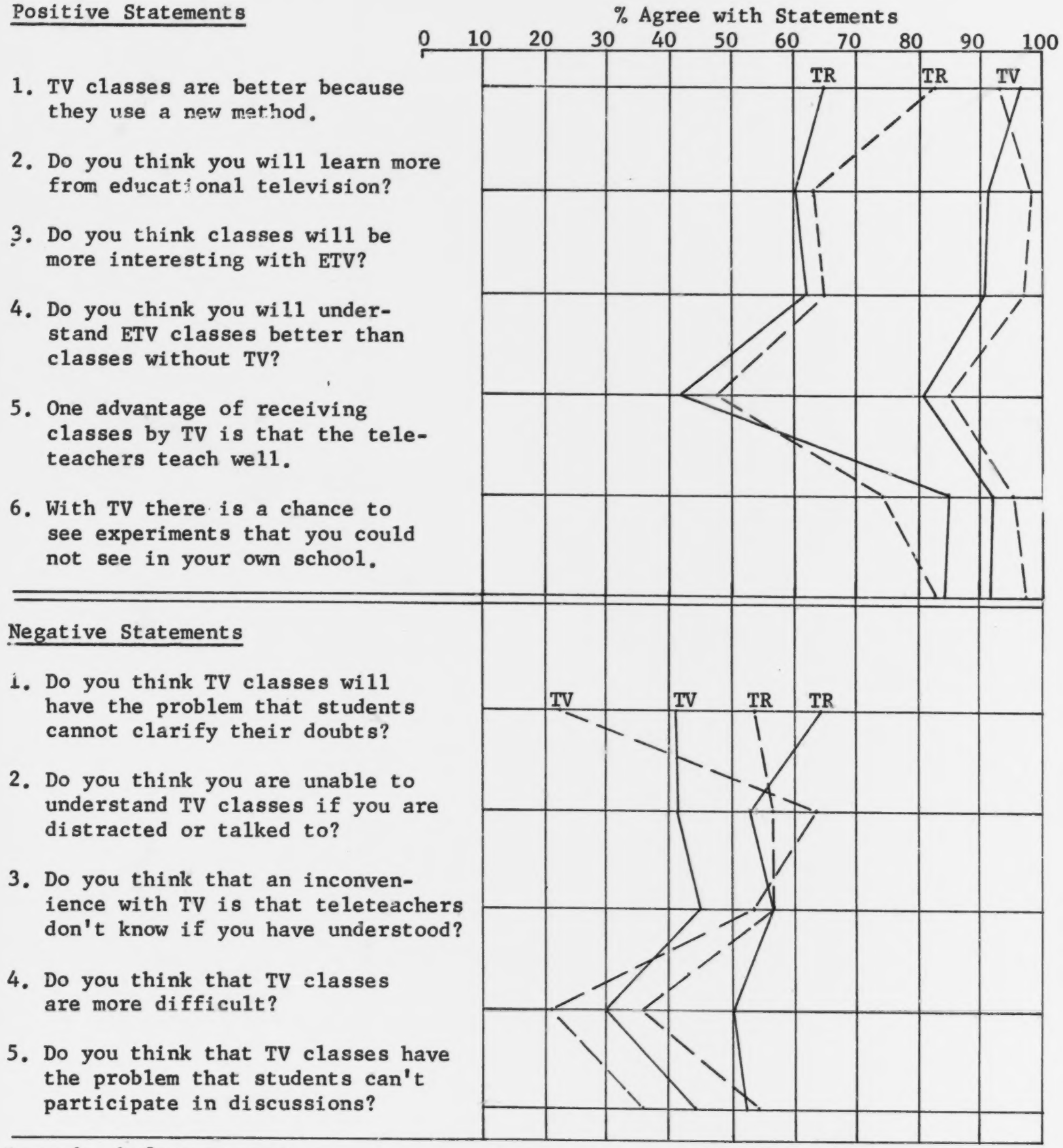
CLOSED: The gap between groups was closed by at least one point on mean scores.

OPENED: The gap between groups was enlarged by at least a point on mean scores in favor of the advantaged group.

1. The urbanization comparison was made only between the urban and rural groups.

FIGURE FIFTEEN

Student attitude graphs concerning television


Positive Statements
% Agree with Statements
0 10 20 30 40 50 60 70 80 90 100
1. TV classes are better because they use a new method.
2. Do you think you will learn more from educational television?
3. Do you think classes will be more interesting with ETV?
4. Do you think you will understand ETV classes better than classes without TV?
5. One advantage of receiving classes by TV is that the teleteachers teach well.
6. With TV there is a chance to see experiments that you could not see in your own school.
TR
TR
TV
Negative Statements
1. Do you think TV classes will have the problem that students cannot clarify their doubts?
2. Do you think you are unable to understand TV classes if you are distracted or talked to?
3. Do you think that an inconvenience with TV is that teleteachers don't know if you have understood?
4. Do you think that TV classes are more difficult?
5. Do you think that TV classes have the problem that students can't participate in discussions?
TV
TV
TR
TR
Legend: before measure: ————————
after measure: — — — — — —
TV: Television classes
TR: Traditional classes

The beginning-of-the-year attitudes expressed by both traditional and television students confirm much of what congruity theory (particularly cognitive dissonance theory) has hypothesized. Even at the beginning of the year, before television students had any opportunity to be taught by television, they were showing sharply more positive attitudes toward television than were the traditional children. Apparently being selected or not being selected for a television class was of major importance in determining expectations of the quality of instruction that television would offer.

On questions favorable to ITV, over 90 per cent of television students agreed with five out of six of the questions. They were sure that they would learn more from ITV, that classes would be more interesting with ITV, that ITV was better because it was a new method, that ITV teachers teach well, and that there was more of an opportunity to see experiments on TV than in the classroom. Eighty per cent agreed that they would understand TV classes better than classes without TV.

At the end of the year we found virtually no disillusionment expressed in their responses. On every one of these questions students either had stayed at the same high level or had moved to an even more positive position. For example, it is noteworthy that 98 per cent of television students thought that classes with TV were more interesting than the others, after their year's experience with televised instruction. One may speculate as to how much of this may be a Hawthorn effect and how much is due to students escaping a rote-learning situation and broadening their learning horizons.

A more varied picture of television students' attitudes toward ITV is produced from the five negatively worded questions reflecting possible problems with ITV. In the beginning of the year between 40 and 45 per cent of television students expressed the fear that they might be unable to clarify doubts, that distraction in the classroom would lessen their understanding of ITV classes, that TV teachers do not know if students have clarified their doubts, and that students cannot participate in discussions during programs. Thirty per cent feared that TV classes would be more difficult than regular classes.

A year's experience with instructional television had sharp effects on students' perceptions of these problems with ITV. Only 23 per cent, at the end of the year, as compared to 41 per cent at the beginning, still thought that students would be unable to clarify their doubts in television classes. Only 19 per cent at the end of the year, as compared to 31 per cent at the beginning, believed that television classes were more difficult than non-television classes. About the same number, 40 per cent, still thought that the inability of students to participate in discussions was an inconvenience of ITV.

Television students' attitudes became sharply more negative on two questions. Sixty-three per cent felt after their year of televised instruction that distraction in the classroom hindered their understanding of television classes. This compares to only 40 per cent who felt that way at the beginning of the year. At the beginning of the year 45 per cent of students had thought that the inability of teleteachers to know whether students have understood

was an inconvenience of ITV; nearly 55 per cent felt that way at the end of the year. Both of these increasingly negative attitudes are especially striking in the light of the overall increasingly positive response to ITV. The feeling that teleteachers sometimes go on without students understanding what had been taught was clearly the case in several subjects, especially in mathematics. Adjustments were made only late in the year and both students and teachers felt left behind.

Traditional students, as indicated above, were somewhat less willing than TV students to agree with statements which regarded ITV positively, and more willing to agree with statements that regarded it negatively.

Change in attitudes did not reflect any experience with television for these students, so in general it is of less interest than information about TV students changing attitudes. By and large non-television students' attitudes did not change in any significant fashion. On one question concerning fear that television classes would be more difficult than non-television classes, there was a sharp drop. Where 50 per cent thought they would be more difficult at the beginning of the year, only 35 per cent felt that way at the end of the year. Although we have no direct evidence, this change may reflect contact with television students who told the others that ITV classes were no harder than the regular classes.

B. Student aspirations for education, occupation, salary

Aspiration was a major topic about which we sought information in the questionnaires given at the beginning and the end of the year.[1] The questions, among other things, concerned educational, occupational, and salary aspirations of students. For educational and salary aspiration, the student had the opportunity to choose a specific goal: level of schooling or amount of money. For occupational aspiration, the student filled in his desired career, and this was coded according to the amount of education required to follow that career.

Analysis of the data suggested that salary aspiration was too dependent on perception of the value of a given salary to be a good measure of this type of aspiration. A rural child sees little money. His parents probably grow some of their own food, make their own clothes, and generally supply the family's needs with a minimum of actual cash exchange. The child himself only handles very small sums. A child who lives in the city, where cash is always used, and where there is more to buy, is aware that it may cost a good deal to live the high status life to which he might aspire. Thus although the rural and the urban child, or the farmer's and the merchant's child, may aspire to the same career, they may have radically different understandings of how much it costs to support appropriate life styles.

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[1] See Appendix B, questions 30-38, in the Survey Questionnaire.

For this reason, all the following discussion considers only occupational and educational aspirations.

Table sixteen presents the percentage of students who aspire to various levels of education and occupations that demand a certain level of schooling.

After inspecting the figures of Table sixteen, there can be no doubt that first-year Plan Basico public school students have very high aspirations. They are aspiring far beyond the educational and occupational levels of their parents, as we pointed out earlier. To see this graphically, we can look at Figure sixteen and see how great this asymmetry is. We have speculated a little about how this may cause familial conflict in the future. Here we might draw attention to another problem that faces the educational system. In one sense it is because of its very success that it faces it.

The original problem that the Educational Reform faced was a bottleneck in secondary education. A large effort is being mounted to overcome this problem, and our results of the first year, although still tentative, are encouraging that both quantity and quality are being expended. Secondary enrollment has increased and will continue to do so. But the bottleneck is now being passed to the university level. In 1968, before the Reform got under way, the National University could only accept about one of five applicants. Those who did not get in might go to the Catholic University if they could pay the necessary tuition. As secondary enrollment increases and more students are graduated, there will be an even greater demand on the

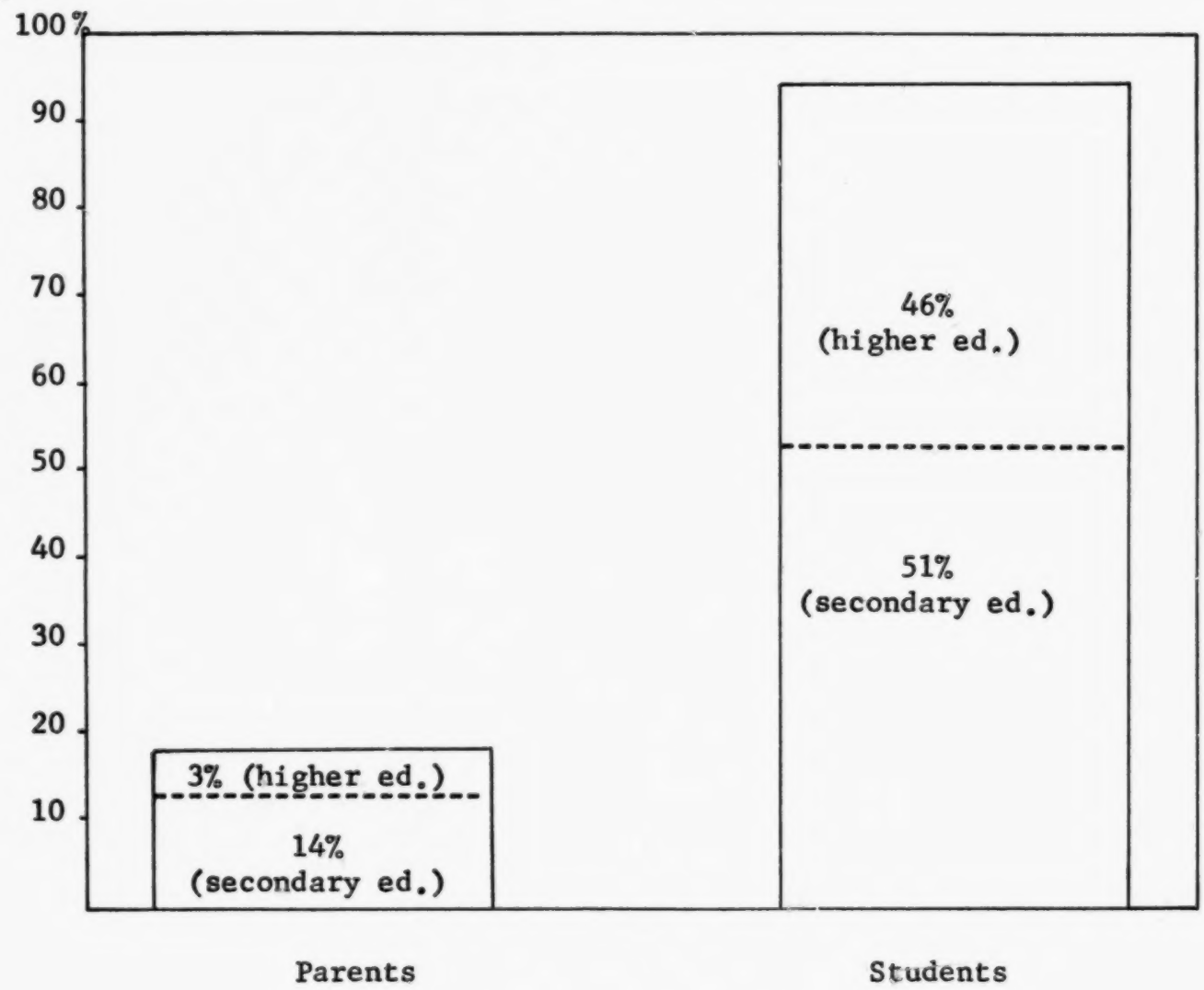
TABLE SIXTEEN

Students educational and occupational aspirations at the beginning and the end of the year

Educational level	Beginning of year	End of year	(ed. required) Occupation level	Beginning of year	End of year
Finish Plan Basico	6%	3%	Secondary not required	5%	2%
Commercial courses (carrera corta)	33%	31%	Secondary required	59%	55%
Higher secondary (bachillerato)	21%	19%	University required	36%	43%
University	13%	18%			
Post-graduate	26%	30%			

FIGURE SIXTEEN

Parents' occupations vs. students' aspirations:
Percentage of parents' current occupations and students' career aspirations for which secondary or higher education is demanded



university. Looking at the high level of aspiration of these first-year Plan Basico students, our best prediction for the majority is disappointment and frustration.

Some might suggest that as these students grow older and understand what their career aspirations imply in terms of years of study, and what the real chances of achieving them are, these high aspirations will automatically adjust to reality. A second approach is to consider these aspirations as fantasies, and not closely held goals of students. Because we asked them about these things they answered, but responses do not represent firm or consistent commitments.

We have a good deal of evidence concerning these alternative hypotheses and are in the process of designing studies to gather more. As of now the evidence is mixed. Let us look at these arguments one by one. The first argument for explaining the data was that as students grow older they will understand reality better and adjust their aspirations downward. In fact, over the course of the year, aspirations went up. At the end of the year, 48 per cent wanted to go to the university in contrast to 39 per cent at the beginning. Forty-three per cent at the end of the year wanted careers requiring university training; only 36 per cent wanted such careers at the beginning.

Also, among a sample of ninth-grade students to whom we gave our questionnaire just before they graduated from Plan Basico, both educational and occupational aspirations were very close to the levels

of the seventh-grade students at the end of the year. Comparability is not complete. There is an estimated dropout rate of about 25 per cent during Plan Basico.[1] Many of these dropouts may be assumed to be low aspirers; thus if all student aspirations remained unchanged for two years, one would expect the ninth-grade mean aspiration scores to be noticeably higher than seventh-grade aspirations since the lower portion of the aspirer group has presumably dropped out. Ninth-grade students did not have higher aspirations than comparable seventh-grade students. We might argue that there had been some adjustment toward lower aspirations among remaining ninth graders. Still they were high enough to make it quite likely that many of them would be disappointed in their educational goals.

The second alternative for explaining results was that aspirations of seventh graders are really just fantasies and not closely held goals. For some students this may be true; our evidence is not entirely clear on this point. Seventy per cent of the sample had consistent occupational and educational goals. That is, if they wanted a career requiring university training, they also wanted a university education; if the career they chose only required secondary education, that was all the education they aspired to. Furthermore, among those who aspired to a university education, when asked how sure they were of reaching their educational goal, 57 per cent declared themselves either probably or very sure to arrive. This much evidence

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[1] Memoria, 1968-1969.

does make it likely that aspiration responses reflected some prior thinking. The depth of commitment to the aspirations, however, remains an open question.

Some evidence that favors the fantasy interpretation is to be found in the very large number of students (over 80 per cent) who answered yes to the question, "If you had the opportunity of being trained and employed as a technician (repairman of electrical appliances or of machinery for boys, machine operator or beautician for girls) on finishing Plan Basico, would you accept the work?" (No. 37, Student Survey, Appendix B) Those willing included nearly 75 per cent of those who had aspired to university education. Unfortunately, considering the scarcity of jobs of this sort at the present time, it is unlikely that many students will in reality be tempted by this bird in the hand, and instead they will likely go on pursuing the two birds in the bush.

This last finding, however, may have important implications for one of the major goals of the educational reform: the creation of a pool of workers with ninth-grade education to fill what are expected to be many technical, clerical, and administrative positions in a rapidly expanding industrial sector. The vast majority of students asked (including 76 per cent of ninth-grade students for whom it would have meant leaving school immediately) have indicated a willingness to accept these jobs for which the government wishes to prepare them. Still, we are necessarily dealing with hypothetical situations. We will not know how firmly students are committed to

professional careers until they are faced with a choice of a middle-level technical job or more school. Without the offer of such a job, a student will undoubtedly opt for more school if he can afford it.

Student occupational aspirations tend to focus on traditional Latin American professions. Twenty-five per cent of those aspiring to university-level careers wanted to be doctors. Another 21 per cent wanted to be nurses. (This, by the way, is one of the few specifically feminine university careers available.) Eight per cent want to be lawyers, 4 per cent architects, and 21 per cent engineers of one sort or another.

Of those students who chose careers requiring only a secondary education, 69 per cent want to be either accountants or secretaries. Most of the rest want to be farmers, or teachers, or military men. A few talk about being mechanics.

To indicate in any depth why people have the aspirations they do is far beyond the scope of this report. Nevertheless, a certain amount of basic information was gathered from the survey questionnaires. Table seventeen presents a matrix of correlations of both occupational and educational aspirations with the same independent variables we have used throughout this section of the report.

Urbanization seems to be completely unrelated to either sort of stated aspiration. Presence of television in the home, or being relatively wealthy, being a boy, and having a father who was well educated, all clearly are related to high educational aspiration, and either only slightly or not at all to occupational aspiration.

TABLE SEVENTEEN

Correlation matrix of background and aspiration variables

	Educational aspiration	Occupational aspiration
Urbanization[1]	.01	.06
Father's education	.13	.08
Television in home	.11	.02
Sex[2]	.14	.01
General ability, total	.24	.12
Reading, total	.25	.14
Occupational aspiration	.46	--

1. Urbanization code: Urban: high
Rural: low

2. Sex code: Female: 2
Male: 1

The lack of relationship of occupational aspiration to being a boy probably stems from the classification of nursing as a career requiring university training. Nearly half of the girls who wanted to follow university-level careers wanted to be nurses.

General ability and reading scores both have strong relationships to aspiration scores. One might suggest several possible causal mechanisms here. The obvious one is that students, knowing their own abilities, choose aspirations within their intellectual reach. It must compete with the alternative hypothesis that high-aspiring children bear down in their schoolwork and consequently score well on tests of all kinds, thus producing higher scores than their low-aspiring counterparts. Or there could be a reciprocal relationship in which one reinforces the other. Finally, one might suggest a socioeconomic factor might intervene and that students from better-off families both do better on general ability and reading exams and have high educational aspiration.

There was some upward movement in aspirations over the course of the year, as we observed in Table sixteen. Although the trend upward was unmistakable, it was not large enough to permit extensive analysis of just who had moved, whether any particular socioeconomic strata of the school population was the most mobile and so forth. It did appear that television classes moved more than traditional classes, but since television classes were somewhat higher to begin with, confident discrimination is not possible.

Aspiration is one major area that will take time to study.

We have no clear evidence thus far exactly how the Educational Reform may affect this important variable in a permanent way. There are several possibilities. The new counseling program in Plan Basico could give students better career guidance so that they would not only have more realistic expectations about job opportunities in certain professional areas but would learn about careers that the industrial sector may be in need of over the next few years. A much closer study of this area is being carried out in the 1970 school year and a better picture of some of the mechanisms should be a help to educational and planning leaders for preparing students for their careers in building their nation. Finally, a needed study of manpower may be undertaken in the near future. The findings of this study should be related to the findings concerning student aspirations.

V. Some notes on attendance, dropout, and failure figures

In an attempt to see whether attendance, dropout, and failure rates were different in television and traditional classes, we investigated available statistical resources in the Ministry. Rather complete year-end reports of many kinds of statistics are made to the Statistical section of the Ministry. However, after making a careful investigation of some data, we found that although the Ministry office handled the data well, there was a great deal of questioning about the accuracy of some of the information reported. For example, it was impossible to arrive at any firm conclusions

about attendance records for TV and traditional classes because of reliability problems with the data.

The dropout data were considerably more reliable. The dropouts reported for TV and traditional classes revealed the following pattern.

	Per cent Dropout		
	Male	Female	Total
Traditional	15.8	10.0	13.3
Television	10.0	8.0	8.8

This would mean that there were more dropouts in traditional classes and would argue against the notion that there was a better quality student in television classes in the end-of-the-year learning comparisons. Just the opposite conclusion should be drawn since we assume that students who are doing less well in school are more likely to drop out during the year. This should mean that the traditional classes should have had a slightly more select group at the end than at the beginning of the year. The more important point is that it seems students are somewhat less likely to drop out of television classes. We need to watch this more carefully over the next two years. Dropout figures for Plan Basico have been rising slightly in the last few years. If televised classes can motivate students to stay in school who might otherwise drop out, it will have served to improve educational efficiency. This function will be even more important when ITV goes to primary schools about 1972.

The rate of pass/fail among students of the two groups is again open to some question due to problems with the data. However,

these data are more reliable than the attendance data. Here we must recall that teachers make the final judgment on the student. It could be that teachers in TV classes felt more constrained to pass their students. On the other hand, a more modern approach to evaluation might have given the student a better opportunity of showing his knowledge; or the student, motivated by the presence of television, may have studied and achieved more (as our own achievement tests indicate -- although these were not used for any classroom promotion). The Salvadoran system has a high failure rate at the end of the year. Students then have to take a make-up exam in a subject in January; if they pass, then they go on to the next grade; if not, they repeat. Repeater rates in Plan Basico are rather low compared to these rates in primary. We will call those who fail at the end of the year but pass the make-up exam in January and advance to the next year "condition" as opposed to those students who fail both exams and must repeat (or drop out) whom we call "fail." The comparison of the two school groups was as follows:

	Per cent of Promotions		
	Pass	Condition	Fail
Traditional classes	73.2	20.3	6.5
Television classes	86.1	11.9	2.0

From the data that we were able to obtain, it seems that the rate of television students passing on the end-of-year tests in 1969 was higher than for traditional classes. This is an encouraging sign and must be watched over the next several years.

Chapter Four

TEACHERS: IMPLEMENTERS OF CHANGE IN THE CLASSROOM

Introduction

The role of teachers in educational systems is critical if for no other reason than that their salaries form the major portion of education budgets. They are, in fact, the single most expensive item in education anywhere in developed or developing countries.[1] In 1968, when the Educational Reform was beginning in El Salvador, the education budget was about $24,000,000, almost twice as much as any other government agency was receiving. Of that sum, approximately two-thirds went to pay teachers at various levels in the education system. One appealing argument made by technologists is that with some form of communication hardware, the number of teachers can be reduced, thereby reducing the cost of schooling. When examined more carefully, the argument usually comes to mean that as many teachers will be required as before but that their training (or retraining) does not have to be as extensive. Existing evidence in both developed (e.g., Instructional Technology Report to the President and Congress from the Academy for Educational Development, 1969) and developing areas (e.g., The New Media: Memo to Educational Planners, Unesco,

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[1] P. H. Coombs, The World Educational Crisis: A Systems Analysis. New York: Oxford University Press, 1968.

1967) indicates that technology will cost the user a considerable amount until large numbers use it; moreover, the success of a technology very much depends on the teacher's acceptance of the technological innovation.

From the point of view of the Ministry of Education, the large number of changes involved in the Reform, including television, were aimed at the improvement in the quality of public instruction in the school system. As quality improves the Ministry also wants to increase the quantity so that ultimately most persons who enter the school system can expect to get at least a ninth-grade education and the education they receive is of good quality. The teacher plays a key role in the improvement of this instructional quality in at least three ways:

a. by having a year's retraining in various subjects at San Andrés Normal School, he will have increased his knowledge of his subject matter, new educational ideas, etc.;

b. he will have increased his professional standing and his self-esteem as a teacher and be less fearful of accepting and using properly the technology of television;

c. he will improve his own teaching methods in the classroom.

We might summarize these three changes as changes in knowledge, in attitude, and in behavior. Ideally, all three changes in the teacher could be measured and related to improvements in the quality of instruction and in student learning. Due to a limitation of time and manpower, we have left the evaluation of how much the teacher

learns in his retraining of those who are in charge of the retraining course at San Andrés; we have helped the supervision section develop an observation instrument to evaluate the teacher's classroom behavior (some results will be reported below); we have concentrated our main efforts on how the teachers feel about the changes in the educational system and what their attitudes are about television.

The following sources of data have been utilized in this report:

1. General statistical figures from Ministry of Education Memoria for 1967-68 and 1968-69.

2. Two survey questionnaires given before and after the first summer teacher-training course at San Andrés Normal School, November, 1968 to January, 1969 (N = 107 and 78). Results of these surveys are reported completely in Research Report No. 2, July, 1969.[1]

3. Two survey questionnaires given before (March, 1969) and after (October, 1969) the first full year with television, to teachers and administrators of the 48 classes under study during 1969: i.e., 32 TV classes, 4 control, 12 traditional (N = 116 and 125).

4. Two survey questionnaires given to teachers before (March, 1969) and after (November, 1969) the full year's retraining course at San Andrés (N = 256 and 227).

5. A survey questionnaire given to graduates of the Superior Normal School after taking a summer retraining course at San Andrés and preparatory to using television in seventh-grade classes, January, 1970 (N = 151).

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[1] See Appendix C for bibliography.

6. A survey questionnaire given to all teachers from the 32 pilot TV classes during their second summer retraining session at San Andrés, November, 1969 (N = 72).

7. Classroom observation data from some exploratory research with an observation scale developed by the supervision section of the Ministry of Education.

8. Personal classroom observation by members of the evaluation group itself and interviews with teachers (School year of 1969, February-November).

I. The teacher studies

The eight studies of El Salvador teachers previously mentioned form the basis for the conclusions outlined in this section. In addition to the surveys themselves, personal contact with teachers, classroom visits, and talks with Plan Basico principals have entered into the interpretation of these data.

We need to remind the reader of some of the factors that have contributed to the generally favorable results reported here. The extensive retraining program helped El Salvador teachers to become familiar with the new technology of television before being asked to use it. Teacher retraining takes place in the same location, San Andrés, where the television studio, offices, and materials center are located. The size of the country of El Salvador (about 150 by 75 miles) is such that nearly all schools are within two or three hours of the capital and generally fair to good roads make most schools easily accessible. The supervision program for the pilot classes during the first year made it possible for teachers to have

weekly contact with Ministry personnel and its television section. This contact made a feedback system to studio and production center much easier than is the case in larger countries without such supervision. During the first school year of 1969, occasional meetings of all teachers, supervisors, and television personnel for discussion of common problems gave a sense of participation to the pilot group of teachers. Regular distribution of weekly teacher guides and student workbooks gave teachers guidance and support in teaching, along with the weekly visit of the supervisor. The retraining program itself exposed teachers to new information, made them read more about innovations in teaching and new instructional technology. In short, the result was a greater professional self-confidence which, as Beeby points out in his book, The Quality of Education in Developing Countries, is a key factor in getting teachers in developing areas to accept needed educational changes.

How all of these factors may work with the much larger group of primary schoolteachers who will start retraining by television in 1971 remains to be seen. But if the new system is accepted and is seen to work on the Plan Basico level, then it is more likely that it will find acceptance among the primary teachers as well. We must now turn to the evidence of how teachers responded to the educational changes in their system.

A. First teacher-training course: pilot schoolteachers

The first teacher-retraining course took place during summer

vacation (November-January) of 1968-69 and involved about 100 teachers, of whom 92 completed the three-months course. A before-and-after survey of attitudes, values, and opinions about the educational system and the changes that were taking place was administered and results of this have been previously reported.[1] To summarize these findings, we note that:

1. Teachers understood the objectives of the Ministry's Educational Reform much better at the end than at the beginning of the course.

2. Teachers generally were favorable toward the use of television in teaching and few saw it as a threat to their status. Most were realistic both about the advantages and the disadvantages of television and came to realize they had a responsibility for making its use effective.

3. Most understood their own tasks in how television was to be properly utilized, especially that their role was not simply to repeat after the broadcast what was on television but were to make their own contribution in instruction.

4. At the end of their course, teachers seemed to be more conscious of their responsibility of teaching students the principles of problem-solving than of merely keeping discipline or getting them to memorize.

5. At the end of the course, teachers broadened their focus on educational problems, seeing them more in terms of how to improve the whole educational system rather than of just solving personal classroom problems.

6. Teachers increased in their belief that more teacher-retraining courses were needed.

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[1] Research Report No. 2, July, 1969.

B. Five surveys from the first school year

1. Teacher groups involved: The first full school year with television ran from February through October, 1969. During this time, four surveys were conducted with two teacher groups. The first two surveys were before-and-after measures of 256 teachers who attended the nine-months retraining course at San Andrés. The third and fourth surveys were before-and-after measures, using the same instrument as in the previous surveys, with teachers and administrators of 32 TV schools (with the four control classes as well) and the ten other randomly chosen "traditional" schools. The fifth application of the same questionnaire was at the end of a two-months retraining program at San Andrés for a group of Superior Normal School graduates, who were to begin using television in February, 1970. The latter survey was conducted in January, 1970.

The particular advantage of administering the same instrument[1] to a number of different groups as well as over time to the same group is evident to social scientists who frequently are forced to work with data that are gathered at a single point in time, with a single group and with an instrument that is untested. Items in this instrument were pretested and, in fact, formed part of the first two surveys given at San Andrés with the first retraining group. Although none of the three groups in the five surveys mentioned represents a random

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[1] Cf. Appendix B for a translated form of this instrument.

sample of the teacher population for Plan Basico schools, the total for the three groups is almost 500 and represents at least a majority of the estimated 900 Plan Basico teachers to be retrained (cf. Section D. in Chapter two). We might have proceeded by lumping together all three groups and analyzing results of this amalgam. However, it is clear that teachers, like any other large social group, form various subclasses and that background factors, attitudes, and values may vary considerably according to group differences. Therefore, we have chosen to report the three groups separately but within the same tables in order to estimate how group factors influence differences of opinion and attitudes.

The first group, mostly made up of pilot teachers in TV classes, undoubtedly reflects a particularly favorable attitude, since they were the pioneers in the project and the focus of a good deal of national attention. Superior Normal graduates, on the other hand, are the only teachers actually prepared by degree to teach secondary school. They have had a history, however, of disagreement with some of the Ministry policies and would be the least likely to be sympathetic to changes emanating from the Ministry itself. We would expect them to form the least positive group. These latter, of course, had not used television in their teaching at the time of the survey and their judgments were expectations rather than opinions based on experience. The group in retraining is the largest of the three (256 before, 227 after) and perhaps the most typical of the primary-trained teacher now teaching secondary and looking for some help in doing so; not a random sample,

they still may be the most typical of the larger group of Plan Basico teachers.

2. The background of the three teacher groups: Table eighteen presents the backgrounds of the three teacher groups. These groups reflect some differences that are worth noting. The largest group, those teachers in the year's retraining at San Andrés, was generally younger and less well educated and had less teaching experience than the other two groups. Of the classroom group (most of whom had used television for a year), 61.6 per cent was over 30; 80.8 per cent of the Superior Normal group was over 30, while only 35.3 per cent of the San Andrés teachers was over 30. The majority of the Superior Normal group had entered teaching in the 1950's (64.9 per cent) and had gradually moved into secondary in the 1960's (66.2 per cent). The classroom group showed more spread in experience, almost 20 per cent with more than 20 years of teaching experience. But this group, like the Superior Normal group, largely moved into secondary teaching within the last ten years, 59.2 per cent beginning secondary teaching since 1960. The retraining group had entered teaching mostly in the last ten years (74.4 per cent) and in the late 1960's had entered secondary (average of three years' experience) if they had any secondary experience at all (16.7 per cent had not). The other major difference among groups is their educational preparation. In the Superior Normal group, practically all had some form of higher education (93 per cent) while in the classroom group,

TABLE EIGHTEEN

Background information on three teacher groups in El Salvador: Classroom TV (and Traditional), Retraining and Superior Normal Graduates

(N.B. Total numbers in parentheses)

		Classroom Group	Retraining Group	Superior Normal
Sex				
	Women	32.8% (41)	30.4% (69)	36.4% (55)
	Men	60.8 (76)	63.3 (143)	54.3 (82)
	No response	6.4 (8)	6.6 (15)	9.3 (14)
Age		Classroom	Retraining	Sup. Normal
	Over 50 (born 1910-1919)	12.8% (16)	1.3% (3)	0.0% (0)
	40-50 (born 1920-1929)	13.6 (17)	4.0 (9)	25.2 (38)
	30-40 (born 1930-1939)	35.2 (44)	30.0 (68)	55.6 (84)
	20-30 (born 1940-1949)	33.6 (42)	57.3 (30)	6.0 (9)
	No response	4.8 (6)	7.5 (17)	13.2 (20)
Teacher Education				
Secondary and teacher preparation		Classroom	Retraining	Sup. Normal
	"A" Classification	26.4% (33)	20.3% (46)	51.7% (78)
	Bachillerato	14.4 (18)	20.7 (47)	13.2 (20)
	Class "A" and Bachillerato	48.8 (61)	52.4 (119)	22.5 (34)
	Other	7.2 (9)	5.8 (13)	1.4 (2)
	No response	3.2 (4)	0.9 (2)	11.3 (17)
Superior or university preparation		Classroom	Retraining	Sup. Normal
	No superior/university preparation	50.4% (63)	80.6%(183)	4.0% (6)
	Normal Superior School	17.6 (22)	0.9 (2)	64.2 (97)
	1 or 2 years university	20.8 (26)	13.2 (30)	19.9 (30)
	3 or more years university	9.6 (12)	4.4 (10)	8.6 (13)
	No response	1.6 (2)	0.9 (2)	3.3 (5)
Teaching Experience				
Entered teaching:	**Years experience**	Classroom	Retraining	Sup. Normal
1930-39	30 or more	4.8% (6)	0.4% (1)	0.0% (0)
1940-49	20 to 29	14.4 (18)	3.1 (7)	4.6 (7)
1950-59	10 to 20	32.8 (41)	15.0 (34)	60.3 (91)
1960-69	less than 10	42.4 (53)	74.4 (169)	29.8 (45)
No response		5.6 (8)	7.0 (16)	5.3 (8)
Entered second. teach.:	**Yrs. exper.**	Classroom	Retraining	Sup. Normal
1940-49	20 to 29	9.6% (12)	0.4% (1)	0.0% (0)
1950-59	10 to 19	25.6 (32)	6.6 (15)	28.5 (43)
1960-69	less than 10	59.2 (74)	75.3 (171)	66.2 (100)
No secondary experience		0.0 (0)	16.7 (38)	4.0 (6)
No response		5.6 (7)	0.8 (2)	1.3 (2)

about half have had no more than a high school education (50.4 per cent). In the retraining group, a vast majority have had no education beyond high school (80.6 per cent). There is about a two-to-one majority of men over women in these groups, about the same male/female proportion reported for all secondary teachers in El Salvador.

3. Attitudes toward the use of television in teaching: The two before-measures were given in March, 1969 to 256 teachers starting their year's retraining at San Andrés, and in April to 116 teachers and principals in the 32 TV and control schools, plus ten traditional schools.[1] We have compared these with the after-measures and found that by and large both groups changed relatively little over the year. Teachers using television, though highly positive toward it as the year began, moved slightly more in favor of it by the end of the year. Teachers in retraining were generally positive but lower than classroom teachers in their attitudes; they moved slightly down in these positive attitudes but on the whole were still quite positive. Since we wish to compare the three groups and have measures for the Superior Normal group only at the end of their two-months training course at San Andrés, we have chosen to use the three after-measures for comparison.

Teachers were presented with attitude statements to which they

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[1] We have chosen to keep the sample of traditional teachers in the analysis even though responses on the attitude scale are slightly more positive when the sample only includes those who used television.

could respond on a five-point scale from strongly agree to strongly disagree. All teacher surveys were completely anonymous and teachers were urged to be frank in their opinions. Results on attitude scales and later interviews with many of the teachers indicate that most felt free to express their real opinions and did so. The items and scales had been pretested. On this section of the questionnaire there were low rates of nonresponse, another indication that teachers felt free to express their real opinions. We have divided the 19 attitude statements into two sets although these were mixed together in the questionnaire. The first consists of ten positively worded statements about the use of television. The second set of nine statements was negatively worded.

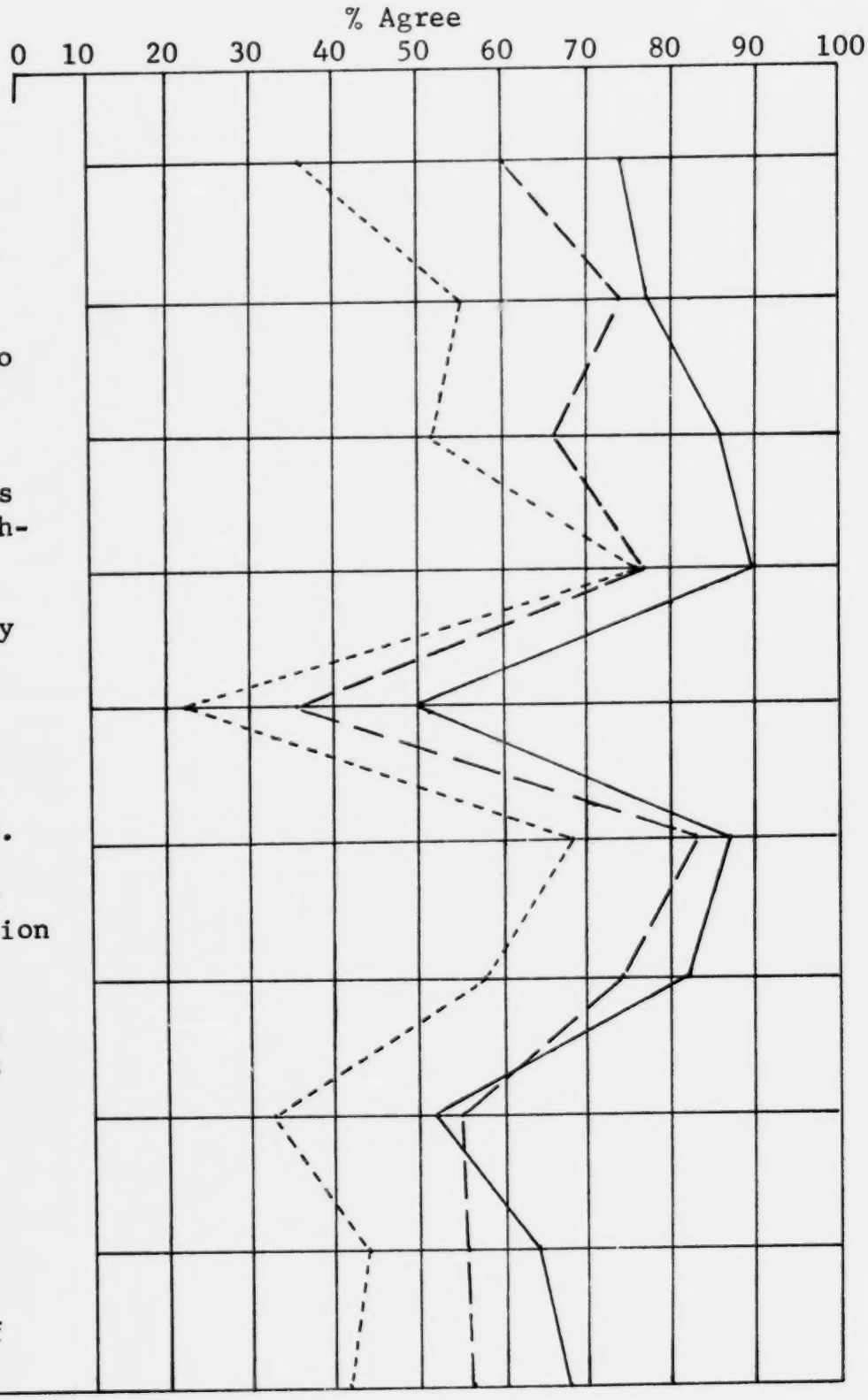
The responses to the positive statements about television in the schools are presented in Figure fifteen. These represent the comparative profiles on after-measures for the three groups. The greater the agreement with the statements and the more positive the attitude toward television, the farther to the right on the percentage scale is the profile line. A consistent pattern among the three groups is clear from this figure: Classroom teachers (TV and traditional) are always the most positive, the teachers in retraining fall in the middle and the Superior Normal group the least favorable. Lest we think that the latter group is merely negative in an arbitrary way, we note that their pattern follows that of the other two groups quite consistently but always at a lower positive level. The similar pattern of response by three distinct groups gives us some assurance that the

FIGURE SEVENTEEN

Graphic representation of agreement with statements favorable to TV on after measures by three teacher groups: classroom, retraining and Superior Normal

Positive Statements

1. Students learn more by TV than by teaching without television.
2. Classroom teachers improve their teaching method by observing the television teacher.
3. With television it is possible to make common exams for promotion for all schools.
4. The classroom and the TV teachers share the responsibility of teaching, but in different ways.
5. Students learn to study better by themselves when they receive classes by television.
6. The talent of better prepared teachers can better be shared by schools when they use television.
7. Teachers learn to organize their schedule better with the television system.
8. Through television you can teach more during the year because you cover more matter.
9. Students are more interested in their classes when they receive them by television.
10. Television will help interest parents more in the education of their children.



Legend: Classroom group (N=125): ————————
Retraining group (N=227): — — — — — —
Superior Normal (N=151): ----------

instrument is measuring the same phenomenon in each group and that these attitudes are consistent across groups though at different levels.

The same is true for the negatively worded statements, presented in Figure eighteen. Here the greater dis<u>agreement</u> with negatively worded statements concerning television (those farther to the right again) indicate more favorable attitudes toward television. We again find the same consistency as in the previous figure: all three groups following a similar pattern but at different levels of disagreement, classroom teachers nearly always the most positive toward television, Superior Normal teachers almost always the least.

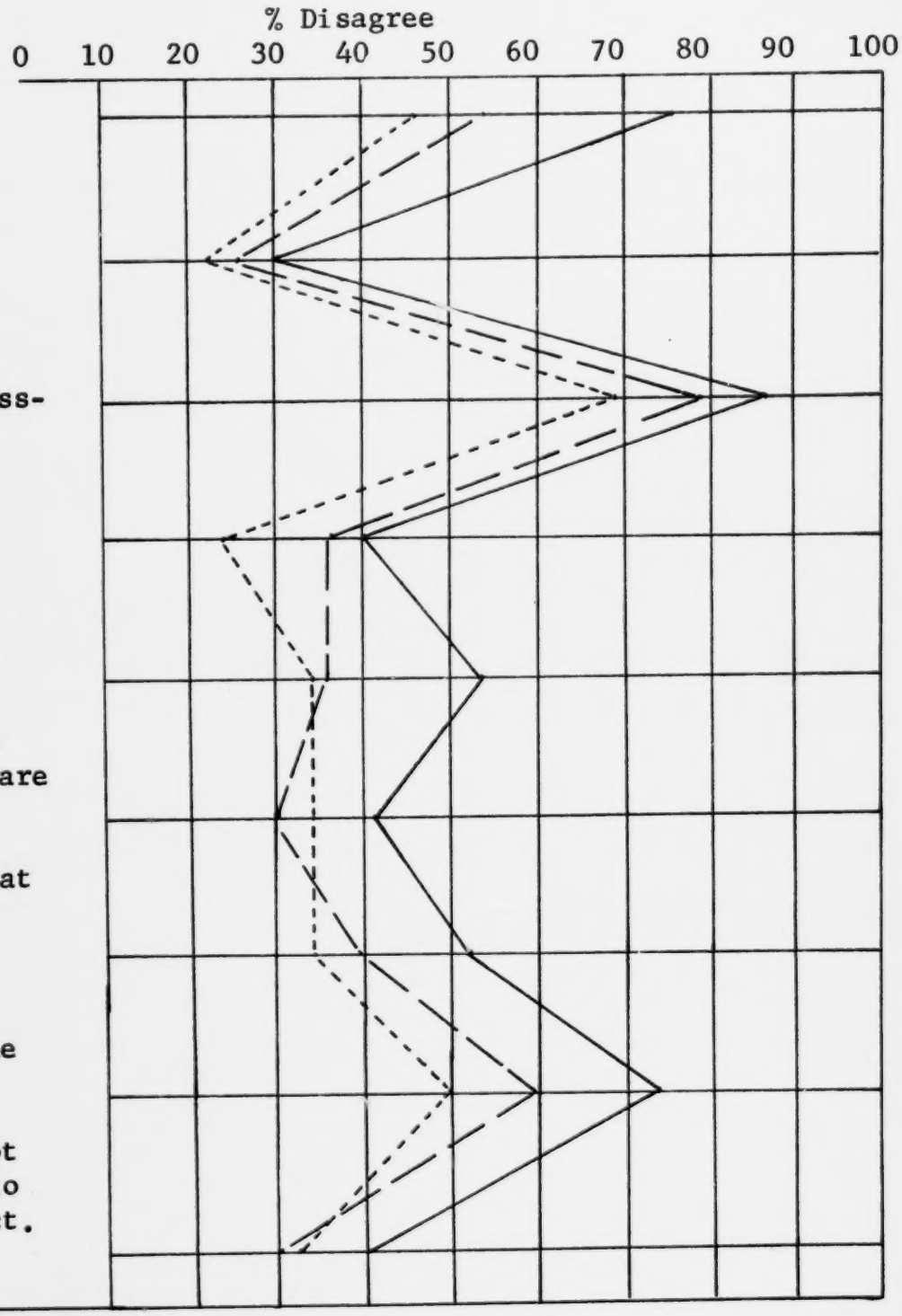
On the whole it is worth noting that the classroom group, a majority of whom worked with television during the year, were the most positive. By the year's end had the classroom experience been negative, we would have found even a pilot group to have been disillusioned by the promised benefits of television and to have expressed their disappointment with negative responses. This was not the case. Interviews with teachers after the school year indicated that although there were problems, the overall feeling was that the television was a help to the teacher. Some of the questions teachers had about television before using it were probably in the minds of many of the two other groups as they answered the questionnaires. A certain amount of healthy skepticism is to be expected from the professionally trained teacher toward anything that promises to change the classroom situation in a major way. This is a better base for using the technology well

FIGURE EIGHTEEN

Graphic representation of disagreement with statements unfavorable to TV on after measures by three teacher groups: classroom, retraining and Superior Normal

Negative Statements

1. It is harder to maintain discipline in class when you teach with television.
2. Classroom teachers can teach what TV programs teach if they have the necessary materials.
3. Television classes hinder personal relations between the classroom teacher and his students.
4. Television programs cover too much matter for the students.
5. Television programs cannot be seen well because the technical equipment is faulty.
6. Television programs teach facts but do not teach concepts that are hard to visualize.
7. A serious problem with TV is that students can't ask questions until the program is over.
8. Teaching with television makes the students more passive in the classes.
9. The television schedule does not permit sufficient flexibility to teachers in teaching his subject. (after only)



Legend: Classroom group (N= 125): ————————
Retraining group (N= 227): — — — — — —
Superior Normal (N= 151): ----------

than would be a poorly informed enthusiasm that may quickly give way to disillusionment. Television is not magic and was not promoted as such.

We feel some brief comment on shifts in the classroom teachers' attitudes is especially called for since their experience is critical as an indicator of future reactions of the entire seventh-grade teaching staff this school year. In Figure nineteen we find that this group shows gains in eight out of ten positively worded statements. They show gains of percentage points on the advantage of common exams (the ETV section of the Ministry gave common quarter and final exams to TV classes during 1969), and a gain of 12 percentage points on how TV helps teachers organize their schedules better. Both of these are important structural improvements that television provided teachers. The only major less on the positive attitudes by classroom teachers was on how TV could cover more matter during the year (no. 8). Teachers found this to be all too true during the year. Some school subjects, especially the new math, went too fast and covered too much for students to digest. This problem was finally remedied, but the rapid pace was a problem that teachers reacted to.

Looking at Figure twenty we find reactions to negative statements. Classroom teachers <u>dis</u>agreed more with negatively worded statements after the year than at the beginning, thereby showing a gain in positive attitudes toward television. These increases were to disagree more with statements about discipline (no. 1, 7 per cent gain), and that television makes students passive (no. 8, 10 per cent gain). The

FIGURE NINETEEN

Graphic representation of agreement with statements favorable to TV before and after the first school year by classroom teachers

Positive Statements

1. Students learn more by TV than by teaching without television.

2. Classroom teachers improve their teaching method by observing the television teacher.

3. With television it is possible to make common exams for promotion for all schools.

4. The classroom and the TV teachers share the responsibility of teaching, but in different ways.

5. Students learn to study better by themselves when they receive classes by television.

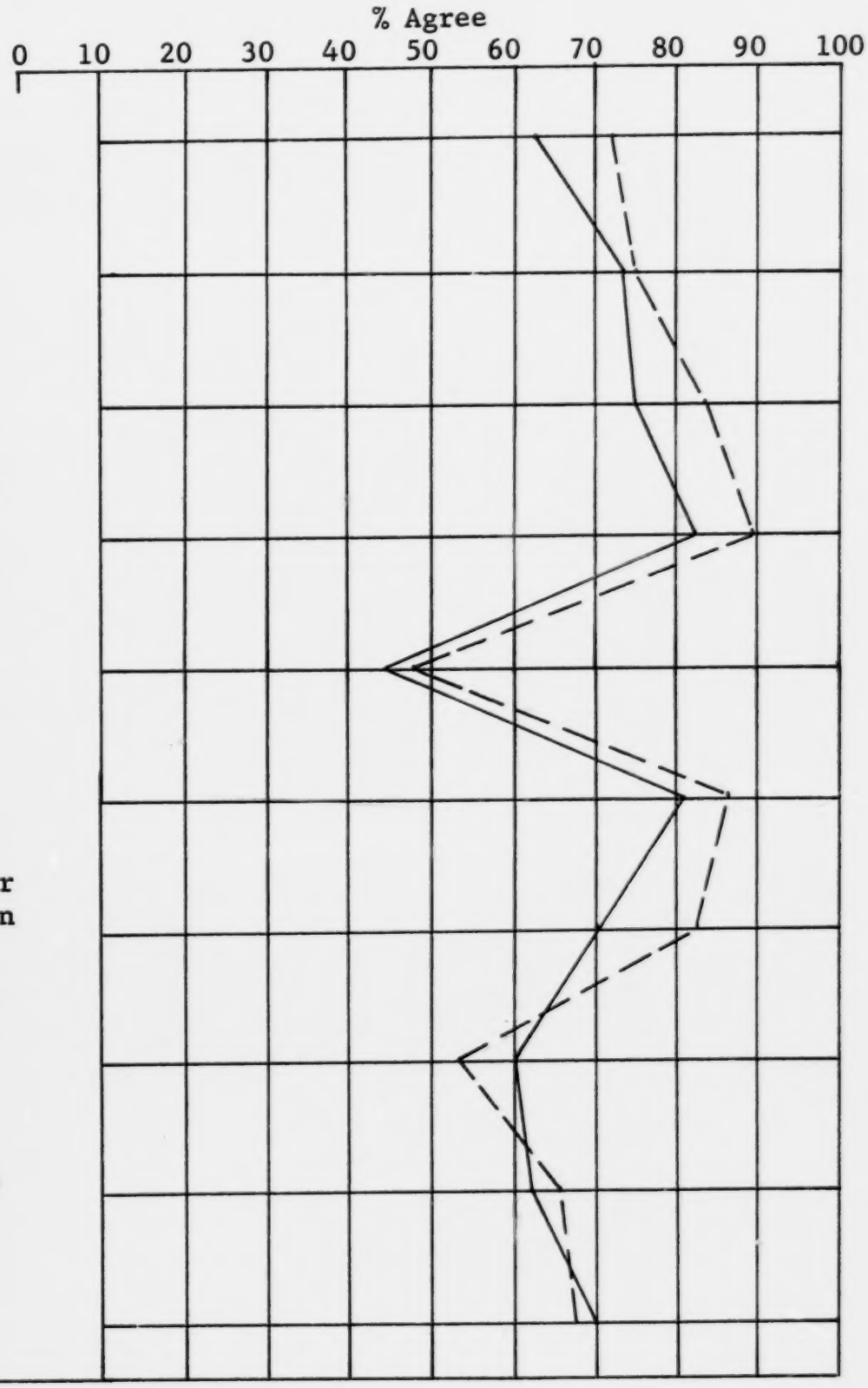
6. The talent of better prepared teachers can better be shared by schools when they use television.

7. Teachers learn to organize their schedule better with the television system.

8. Through television you can teach more during the year because you cover more matter.

9. Students are more interested in their classes when they receive them by television.

10. Television will help interest parents more in the education of their children.



Legend: Classroom group before (N = 116): ————————

Classroom group after (N = 125): — — — — — —

FIGURE TWENTY

Graphic representation of disagreement with statements unfavorable to TV before and after the first school year by classroom teachers

Negative Statements

1. It is harder to maintain discipline in class when you teach with television.

2. Classroom teachers can teach what TV programs teach if they have the necessary materials.

3. Television classes hinder personal relations between the classroom teacher and his students.

4. Television programs cover too much matter for the students.

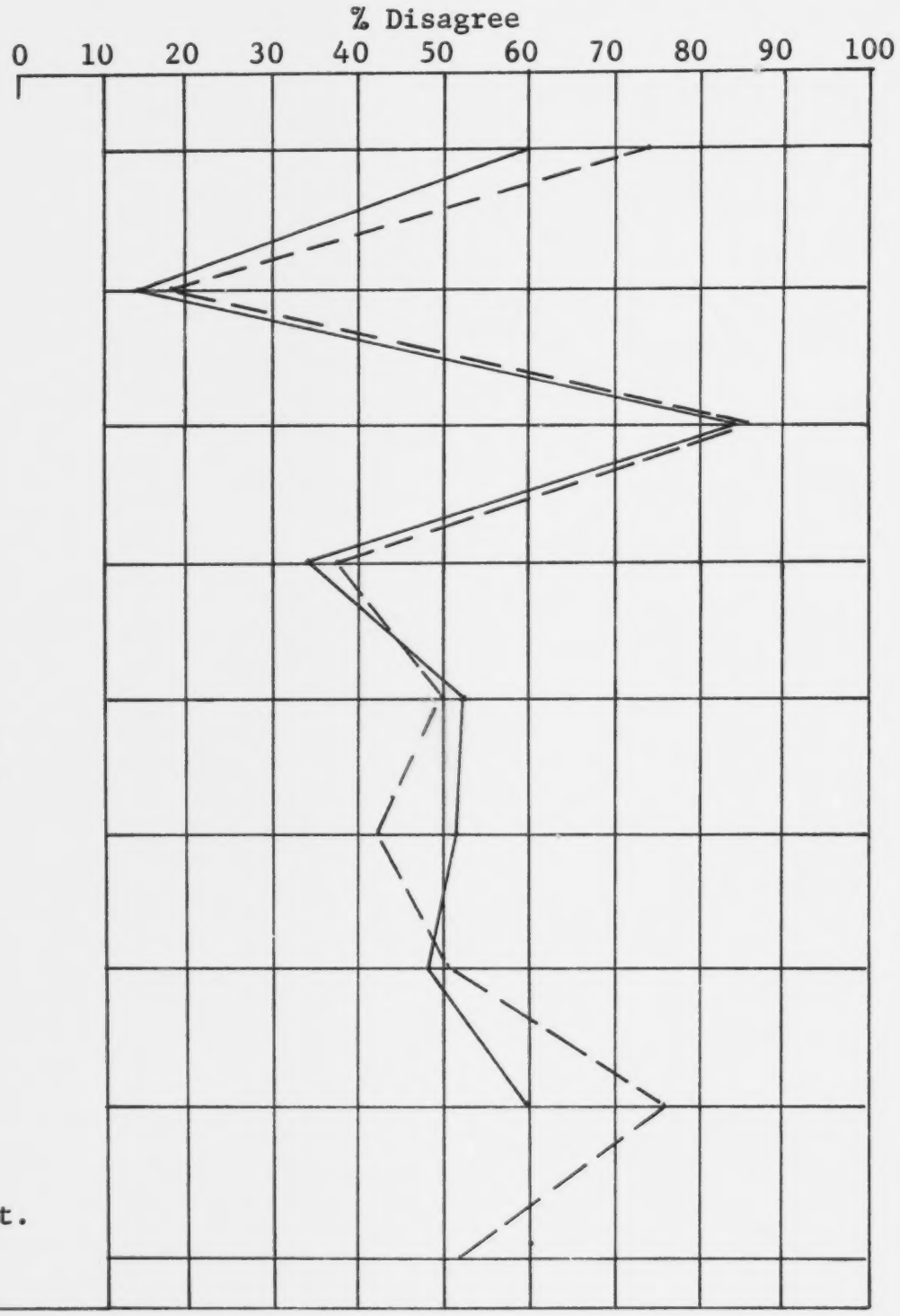
5. Television programs cannot be seen well because the technical equipment is faulty.

6. Television programs teach facts but do not teach concepts that are hard to visualize.

7. A serious problem with TV is that students can't ask questions until the program is over.

8. Teaching with television makes the students more passive in the classes.

9. The television schedule does not permit sufficient flexibility to teachers in teaching his subject. (after only)



Legend: Classroom group before (N = 116): ————————

Classroom group after (N = 125): — — — — — —

last point about student passivity is important in light of the classroom observations made last year where most observers were impressed about how much more passive the non-television classes were. Rote learning is fundamentally passive; it puts heavy emphasis on memory and not on active response. The fact that classroom teachers seemed to have observed this in using television adds some confirmation to this interpretation.

An item where classroom teachers became less positive was on one stating that TV only teaches facts and not concepts difficult to visualize (no. 6). This may be a warning to television producers to improve on their visual material, but it also may be the teachers' way of saying that they have something to contribute that television can not substitute for.

Another way of considering these data on attitudes is to look at those statements on which the groups are most widely divided. These should show up points that are especially sensitive for teachers; but it also may show that experience with television will clear up genuine doubts about its efficacy. Looking again at Figure seventeen, there appears to be a wide disagreement on whether students learn more with television (no. 1). Classroom teachers not only agree strongly on this but actually increased this belief over the year by 7 percentage points. Skeptics may have to use television to become convinced of this. It is not surprising to find the better educated Superior Normal teachers disagreeing much more with the idea that teachers can improve their methods by watching the television teacher (no. 2).

The less well-trained teachers in the San Andrés retraining group are closer to the classroom teachers on this point, quite willing to accept help where they can find it.

The idea that common exams (no. 3) will be an advantage of television also widely divides the groups. Common exams may pose a threat to teachers long accustomed to giving their own exams and not being measured in comparison with anyone else. Classroom teachers did not seem to find the experience harmful to their teaching and, in fact, showed large change on this statement (gain of 10 percentage points in favor of the statement). That students learn to study better on their own with television (nc. 5) is less wholeheartedly supported in general though again classroom teachers are considerably more positive than the other two groups. It will be interesting to observe whether this attitude is held more or less positively by classroom teachers over several years of experience.

Another statement on which there is some disagreement is whether television helps teachers to organize their schedules better (no. 7). Classroom teachers showed gains on this of 12 percentage points. The advantage of giving more structure to teachers in a developing educational system has been pointed out by several previous researchers. Beeby,[1] in his book, sees this as a part of improving the teachers' instruction at stage two of his paradigm of development.

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[1] The Quality of Education in Developing Countries.

It may well be an advantage for teachers moving toward stage three as well, where one would probably place most Plan Basico teachers in El Salvador. The research on the Colombia ETV system[1] also pointed out that television had the effect of helping to structure the teacher's schedule and make him more productive.

In two other questions about covering more material (no. 8) and television getting parents interested in their children's education (no. 10), though there was a considerable spread, classroom teachers themselves retrenched slightly from original positions. Experience seemed to show that television sometimes actually covered too much. As for parents, although one study made during the year[2] showed that parents generally had quite positive attitudes toward instructional television, their attitudes may not have been reflected in any changed behavior toward teachers or the school. On other questionnaires, teachers have expressed the feeling that apathy on the part of parents is a major problem in the educational system.

Turning to Figure eighteen we notice that there is generally less wide disagreement among the three groups. Concerning TV's effect on discipline (no. 1), both classroom and retraining teachers disagree more at the end of the year that television will cause more discipline

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[1]G. Comstock and N. Maccoby, The Peace Corps Educational Television Project in Colombia - Two Years of Research, Stanford, Calif.: Institute for Communication Research, Stanford University, 1966-67, 12 vols.

[2]L. F. Valero and E. G. McAnany, Parents Talk About ETV in El Salvador, Research Memorandum No. 2. Stanford, Calif.: Institute for Communication Research, Stanford University, October, 1969.

problems (by 15 and 9 percentage points respectively). The other question on which there is wide disagreement is whether students become more passive or not (no. 8). We have discussed the ramifications of this earlier. With experience, classroom teachers disagree more with this assessment.

In sum, the attitudes expressed in these data indicate that teachers are generally willing to use television as a help to their teaching and that by and large classroom experience increases this positive attitude. Not all teachers are equally convinced of the advantage of the new technology, but as a group they seem to manifest the same patterns of response and will hopefully have similar positive experiences with it in the classroom, as did the first pilot group of teachers.

4. Other attitudes about the educational system: Several other questions were asked of teachers about changes in the educational system of El Salvador and specifically about the Educational Reform. Two of the other questions asked should be singled out for comment. Responses on the after-measure for the three groups are presented in Table nineteen for the two questions: (a) how much education should the majority of the country's population have? and (b) what order of priority do the teachers place on the main items of the Reform: With regard to the first question, it is interesting to note that almost 80 per cent of the Superior Normal teachers judged that the majority of Salvadorans should at present get no more than a Plan Basico or ninth-grade education. The other two groups are more optimistic in

TABLE NINETEEN

Percentage distributions and rank orders for two questions about the El Salvador Educational Reform by three teacher groups

1. "For the time, what level of education do you think necessary for the greater part of the population?"

	Classroom	Retraining	Sup. Normal
a) Primary	15.2%	19.8%	39.7%
b) Plan Basico	46.4	36.1	39.1
c) Complete Secondary	29.2	34.0	17.2
d) Higher education	4.0	5.0	4.0

2. "There appears below a list of programs that have recently been started or suggested in the field of education. We ask you to pick three programs that in your opinion are the most important for the Educational Reform."

	Rank Orders		
	Classroom	Retraining	Sup. Normal
a. Teacher retraining	1	1	1
b. Educational television	1	3	5
c. Full-time teachers	3	5	3
d. Better supervision	4	2	4
e. Building schools	5	4	2
f. New curriculum	6	8	8
g. Uniformity of assignments and teaching materials	7	6	6
h. New Normal study program	8	7	7
i. Double sessions in schools	9	9	10
j. Change in class schedule	10	10	9

their judgments, but perhaps are unrealistic about the cost and the ability of the government to provide more education. The Superior Normal group comes closer to the thinking of the Ministry on this point, since the current plan is to try to offer all Salvadoran children opportunity for nine grades of education.

The second question concerns priorities in important goals of the Reform. Even though the three groups had different rankings on some goals, the general pattern is again similar for all groups. Teacher training, educational television, and supervision are goals high on everyone's list. These are also goals that the Ministry of Education has given priority to, not only in their plans but also in implementation. Teachers, being a pragmatic group, seem more impressed by the things that are being done than those merely talked about.

C. Utilization survey for TV classroom teachers

The secondary supervision section of the Ministry is in charge of gathering feedback from classroom teachers and presenting this information to television production to help improve programming. This takes the form of brief questionnaires that can be checked off by teachers and periodically gathered up by supervisors. This system functioned relatively well during the first year and provided production teams with important information for changing certain things in lessons and printed materials.

The evaluation group created a summary questionnaire for TV classroom teachers when these returned to San Andrés for a second

summer's session of retraining in November, 1969. Limited to those who had actually used television in their classes, the survey asked about how teachers liked each of the program series (math, Spanish, English, science, and social studies), about printed materials (guides, workbooks) and supervision.

It would be too long to give a full account of the results of this questionnaire. Relevant information was immediately passed on to television personnel for their benefit. We will note here only some of the more important findings:

1. Teachers gave English the highest general rating, science the lowest. Mathematics, with which students had considerable difficulty, was rated the most difficult subject.

2. The most common problem for all subjects is that the television classes cover too much material, though this was especially true for math and English.

3. The teacher guides to the weekly subject matters are generally well received, especially in Spanish, English, and social studies. Criticisms are that sometimes guides arrive late, at times do not offer sufficient material to prepare well for class, and contain occasional suggestions for class activities that do not seem closely related to the theme to be developed.

4. Teachers affirmed that for the most part supervisors were regular in their weekly visits but that their help to the teachers could be improved by their better preparation in the subject matters they supervised (there were separate supervisors for math-science and the humanities), and that the supervisor could help supply the teacher with more teaching materials (this latter suggestion is, of course, limited by Ministry budgets, not by supervisors themselves).

5. Teachers overwhelmingly say that using television in class means more preparation time on their part.

6. Two-thirds affirm that television helped them a great deal in reinforcing their own teaching of the subject matter.

II. Classroom changes: some observations[1]

Only the beginnings of a formal classroom observation instrument have been achieved, and we await a full force of supervisors to gather needed data. Nevertheless, many hours of observation by evaluation team members and supervisors have given some insight into what teachers are doing in the classrooms. The following remarks give a picture of what is taking place.

For students in El Salvador, the typical plan Basico room has been a dreary place, both visually and intellectually. Aside from a single blackboard, its walls were generally bare, save for an occasional calendar, religious picture, or map.

Invariably seated in rows, students were expected to listen while the teacher lectured or read from a textbook. When they were not merely listening, students copied dictations or résumés. If the teacher asked questions, they were usually memory questions, e.g., who discovered El Salvador, when was Columbus born? Students were almost never prompted to venture an opinion, to participate in discussions, or even to ask questions of the teacher.

Because of the scarcity of textbooks and school libraries, the

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[1]The following section was contributed by Mrs. Judith A. Mayo, technical adviser in supervision.

teacher was the students' sole source of information. Students were rather like empty vessels that the teacher filled with information contained in the official curriculum. Students passively absorbed this information and were expected to regurgitate it verbatim on examinations.

Little attempt was made to relate classroom learning to the students' environment and experiences or to their interests and needs. Knowledge was treated as a fixed body of concepts and facts to be memorized and the sole arbiter and dispenser of knowledge was the teacher.

Spurred by the Educational Reform movement, a new kind of typical classroom is developing in El Salvador. This new classroom is being shaped by such changes in the educational system as curriculum reform, teacher re-education, and educational television, and it is beginning to be reinforced by a modern system of supervision.

As a major component of the Educational Reform, television brings to Salvadoran classrooms the new curricula and, even more important, a new concept of the teaching-learning process as one in which the learner is an active participant. Through television, the new curriculum provides a variety of information sources for students. The teleteacher himself serves this function and, in addition, students are provided with simple texts in the form of workbooks for each subject. The classroom teacher's word is no longer the only word. Dictation and résumés largely disappear, because this function has

been taken over by workbooks which include basic information as well as problems and exercises.

The workbooks also help to alter the student-teacher relationship in the classroom. Workbook problems are generally resolved in small groups, where students discuss possible solutions and seek the teacher's help when they disagree among themselves or are unable to find any solution. In this way, students learn from one another at the same time they learn to have confidence in their ability to solve problems on their own. Students thus learn that knowledge can be applied to problem-solving, and that it is not simply a set of facts to memorize and store for examinations. No longer passive receptacles of knowledge, students tend to become active participants in its acquisition and use.

Television in the classroom stimulates activity and participation in other ways as well. In television schools, classroom walls become display areas for student projects such as leaf collections for science, social studies maps, number charts for mathematics, pictures representing new words learned in English, and so on.

In contrast to the teacher in a traditional classroom, the teacher in a television class is constantly stimulated to vary his role and his methods of teaching. In addition to his retraining and to the methodological help provided by new supervisors, he receives a guide each week from the Ministry explaining what will be taught on television. The guide also suggests activities to motivate students prior to the telecast and to reinforce their learning after the

broadcast. The teacher is helped to plan his class better since the guide suggests activities that involve students, and not simply information to be taught by the teacher.

The teleteacher should also be a model of good teaching techniques that can be emulated by the classroom teacher. In some instances, the classroom teacher develops a feeling of competition with the teleteacher, and he works very hard to show his students that he is as competent and creative as the teleteacher. This kind of healthy competition is of obvious benefit to the students.

The traditional classroom in El Salvador, then, was typically an isolated, unstimulating, and sometimes even depressing environment totally controlled by the teacher. In contrast, the television classroom is designed to provide students a variety of experiences. These experiences stimulate students' participation in the learning process and make them learners in the best sense of the word.

Appendix A

SOME NOTES ON TECHNICAL POINTS

1. Student surveys and testing

At the beginning of the school year, there were 1,814 students included in our sample. They came from 42 schools, including 32 classes with television (four of these in private schools), four control classes and 12 traditional classes, all in the seventh grade. The traditional classes were a random sample of all classes in the country without television. The television and control classes were chosen by the Ministry and were not a random sample. At the end of the year, our sample included 1,689 students of 1,814 we had tested in February. Of these, 1,340 took all three achievement tests and filled out the survey questionnaire at both the beginning and the end of the year. Nearly all of these also took the general ability and reading tests, given in April and May.

These 1,340 students were the ones studied in our analysis. Thus, in order to be kept in our sample, a student had to have taken six exams, filled out two questionnaires, and probably also taken the two other ability exams. Most of these instruments were administered on different days since our freedom to take students away from class was not unlimited. Under these stiff requirements, we did not consider a mortality rate of less than 25 per cent as particularly high. This 25 per cent includes students who had dropped out during the school

year (this rate was estimated as about 10 per cent for first-year students in 1968); it included as well students who had moved to other schools, who had entered school after the first two weeks of the year and students who were absent on the day one of the required tests or questionnaires was administered. Time and cost considerations prevented us from extensive follow-ups in search of missing students.

A random sample of all ninth-grade classes in the 42 schools of our study gave us a sample of 466 students who filled out the survey questionnaire at the end of the school year. Information was also gathered from them about their plans for schooling the following year. Their responses will serve as a baseline for future analysis of the effects of the Educational Reform on students when the classes that were in first-year Plan Basico for our research reach the third year in 1971.

We have some evidence, cited in Chapter three, that the rate of dropouts during the school year was higher for the traditional as opposed to the television classes. There we showed that according to the data we could derive from Ministry records the dropout rate for traditional classes was 13.3 per cent during the 1969 school year and only 8.8 per cent for TV classes. This should mean that the traditional classes were even more selective at the end of the year and should have had a slight advantage in able students over the TV classes.

2. Analysis techniques

All of the nonexperimental analysis was done on a one-out

of-four class-stratified random subsample of the 1,340 students who had completed all of the testing requirements. This included 205 students in public school TV classes, 93 students in traditional classes, 42 students in private school classes, and 33 students in control classes. Most of the analyses in the statistical profile, where instructional method was not an issue, included the 331 students not in private school classes.

Control-experimental analyses described in the learning section were done with the full sample of 264 students (everyone in the eight classes involved).

Nearly all of the analyses were done with cross-tabulation or other distributional analysis derived from this method. We felt this permitted us much greater flexibility in examining relationships than would have correlational analysis, with its many limitations and assumptions. In some cases we have reported correlations when we felt that they had not distorted the particular relationship, and when they served as a useful shorthand description of data we did not feel deserved more thoroughgoing analysis.

If the logic of significance testing was applicable, virtually all relationships that are reported in the text reach statistical significance of at least $p < .05$. Exceptions are noted in the text. Individual significance figures are not generally reported because we felt that our major concern was the social importance of the relationship rather than its reaching a particular statistical significance. Many statistically significant relationships in the total data collection

are not reported at all; our aim was not to make an exhaustive study of all the factors, but of those most relevant to our interests in the present research. We realize that among so many variables in our first year's research by chance alone there are bound to be a considerable number of significant figures. If we reported a relationship, we felt it was important enough and clear enough so that it made a contribution to the understanding of the phenomenon we were studying.

3. Instruments

The achievement tests were developed by Educational Testing Service of Princeton, New Jersey from the revised Salvadoran curriculum for seventh grade. General Ability and Reading Tests were the Spanish version of a set of tests distributed by Guidance Testing Associates of Austin, Texas. They were level three of the Habilidad General and the Lectura tests. The survey questionnaires were developed and pretested by the research group from Stanford University in collaboration with the Evaluation Section of the Ministry of Education's ITV Department. A complete translation of one of the student surveys as well as one of the teachers' surveys is included in Appendix B.

4. Teacher and cognitive studies

The teacher surveys have been explained in Chapter four. As we pointed out in Chapter four, none of the teacher groups that we studied in the first year of research was a random sample of the

Plan Basico population, but together they do represent over 500 of the estimated 900 teachers in Plan Basico classrooms.

The cognitive studies also have been reported in some detail in Chapter three. Further analysis of the data will be made and the results published. The numbers involved in all of these studies were as follows:

Year in School	Picture Equivalence	Word Equivalence	Alternative Uses Test
First grade	80	60	40
Third grade	80	60	40
Fifth grade	--	--	40
Sixth grade	80	60	--
Seventh grade	80	80	--

All students were chosen randomly from their respective classes except for illiterate rural children who were chosen from among a volunteer group.

Appendix B

STUDENT AND TEACHER SURVEYS

The following samples of a student and a teacher survey questionnaire are translations of instruments used in the end-of-the-year research, October, 1969. The student survey was revised several times, but this version is almost identical with the one given at the beginning of the school year in February. The same may be said of the teacher questionnaire. This version, given in October, 1969, was almost identical with the one given in March and April to the classroom teachers and those in retraining at San Andrés. This version of the teacher questionnaire was the basis of comparison for the three teacher groups spoken of in Chapter four (classroom, retraining, and Superior Normal groups).

I. Student Survey -- October, 1969

Full name _____

Name of the School _____

Instructions: In order to answer the following questions you should put an "X" in the blank spaces that correspond to the answer or answers that you have selected. For example, sometimes we ask for only one answer, but in others you may need to select more than one, so you should be careful to mark only the number of answers that we ask you; otherwise we will not be able to use the information. In those cases for which you should fill in the information, use the appropriate space provided for that use. When you do not have an answer for a question, leave it blank.

General Information

1. Age _____ years

2. Sex _____ feminine
   _____ masculine

3. Date of birth _____
   month day year

4. Number of persons living in your house (including yourself and maids):

   _____ total number

5. Select from the following list those who live in your house:

   _____ mother
   _____ father
   _____ brothers and sisters
   _____ grandparents
   _____ other relatives
   _____ other nonrelatives

6. Father's occupation _____

7. Mother's occupation _____.

8. Mark the highest level of education reached by:

Your father:
_____ no grade school
_____ part of grade school
_____ finished grade school
_____ completed Plan Basico
_____ completed bachillerato (higher secondary)
_____ completed carrera corta (business course)
_____ completed university

Your mother:
_____ no grade school
_____ part of grade school
_____ completed grade school
_____ completed Plan Basico
_____ completed bachillerato (higher secondary)
_____ completed carrera corta (business course)
_____ completed university

Section II

9. Do you think that you learn more from educational television?

_____ No
_____ Yes

10. Do you think that your classes are more interesting by ETV?

_____ No
_____ Yes

11. Do you think that classes from ETV have the problem that students can't clarify their doubts?

_____ No
_____ Yes

12. Do you think that someone won't be able to understand the lessons by ETV if he gets distracted or talks?

_____ No
_____ Yes

13. Do you think that you understand your classes better by ETV than without ETV?

_____ No
_____ Yes

14. One advantage of having classes taught by ETV is that teleteachers teach well.

_____ No

_____ Yes

15. Do you think that one of the disadvantages of receiving classes by ETV is that the teleteachers won't know whether the students have understood or not?

_____ No

_____ Yes

16. Do you think that classes by ETV are more difficult?

_____ No

_____ Yes

17. Do you think that ETV classes have the problem of not being able to participate in discussions?

_____ No

_____ Yes

18. With ETV one can watch experiments that are not possible to do at school.

_____ No

_____ Yes

19. Classes given by ETV are better because they use a new method.

_____ No

_____ Yes

Section III

20. Mark in the following list the things you have in your house:

_____ newspapers
_____ magazines
_____ radio set
_____ TV set
_____ books

21. In addition to your lessons by ETV, how many times did you watch TV last week?

_____ none
_____ 1 or 2 times
_____ 3 or 4 times
_____ 5 or 6 times
_____ every day

22. What is your favorite subject by ETV? _____

23. What are your two favorite programs in commercial TV?

1. _____

2. _____

24. How much do you listen to the radio every day?

_____ not at all
_____ 1-2 hours daily
_____ 3-4 hours daily
_____ more than 4 hours daily

25. How frequently did you read the newspapers last week?

_____ not at all
_____ 1 or 2 times
_____ 3 or 4 times
_____ 5 or 6 times
_____ every day

26. How many times did you read magazines last week?

_____ not at all
_____ 1 or 2 times
_____ 3 or 4 times
_____ over 4 times

27. How many books did you read last year? (Do not include those that you read for your classes.)

_____ none
_____ from 1 to 3
_____ from 4 to 10
_____ over 10

28. How frequently did you go to the movies last month?

_____ not at all
_____ 1 or 2 times
_____ 3 or 4 times
_____ over 4 times

Section IV

29. For the present time, what level of education do you consider necessary for the majority of the population?

_____ Primary
_____ Plan Basico
_____ Bachillerato (higher secondary)
_____ Carrera corta (business course)
_____ Superior studies or university
_____ Post-graduate studies

30. How far in your studies would you like to go?

_____ finish carrera corta (business course) without Plan Basico
_____ finish Plan Basico
_____ finish carrera corta (business course) after Plan Basico
_____ finish bachillerato (higher secondary)
_____ finish university
_____ do graduate work

31. How sure do you feel about the level of studies you will reach? Put an "X" in the proper space.

I am sure I will not finish	I don't think I will finish	Maybe I will finish	I will probably finish	I am sure I will finish

32. Among the following, mark the most important reason why you will not be able to study as much as you would like:

_____ lack of money
_____ subject matter will be too difficult
_____ my parents will oppose my decision
_____ lack of opportunity (lack of places in school, live too far away, etc.)
_____ other (explain) _____

33. Put in the order of importance the profession you would like to follow; put the one you most like first and so on successively:

1st _____

2nd _____

3rd _____

34. From the following, choose the most important reason in the last question for selecting your first choice of profession.

_____ because you like it most without any special reason
_____ because they pay a good salary
_____ because it is a dignified profession
_____ because it allows one to get ahead in his work
_____ because it does not require too much study
_____ because it is a short commercial course (carrera corta)
_____ other reason (explain) _____

35. What is the minimum monthly salary that you would consider necessary to live on decently?

_____ from $40 to $80*
_____ from $80 to $120*
_____ from $120 to $160*
_____ from $160 to $200*
_____ from $200 to $240*
_____ from $240 to $280*
_____ from $280 to $320*
_____ over $320*

36. Do your parents agree with you about the profession you would like to study?

_____ No
_____ Yes
_____ Do not know

37. If you would have the opportunity to be trained and employed as a technician (i.e., for boys, training in repairing electrical equipment and maintenance of machinery; for girls how to use industrial machinery, beautician, etc.) when you finish the ninth grade, would you accept such a job?

_____ No
_____ Yes

38. Who in your family is the person who worries the most about your Education?

_____ father
_____ mother
_____ other relatives
_____ other persons (explain who they are) _____
_____ nobody

---

*All these figures were originally in colones: 1 colon = $.40 U.S. dollar.

Section V

39. To get a good education it is not worth the sacrifice of leaving one's family.

_____ No

_____ Yes

40. People are born with or without intelligence; education is not worthwhile for those that are not intelligent.

_____ No

_____ Yes

41. The prestige of a good education is better than receiving a high salary.

_____ No

_____ Yes

42. Schooling after primary is a privilege that should be given only to the most intelligent students.

_____ No

_____ Yes

43. In general, it is better to accept a good job when it is offered than to continue studying with the hope of getting a better one in the future.

_____ No

_____ Yes

44. The most successful people in life have a good job because they have friends or relatives who help them and not because of their own ability or knowledge.

_____ No

_____ Yes

45. A good education is no guarantee of finding a better job in the future.

_____ No

_____ Yes

II. Teachers' Survey

Date _____

Section I - Personal data

1. Place of birth _____

   Date of birth _____
   day month year

   Department _____

   Sex _____

2. Mark in the blank spaces your classification as primary schoolteacher, if you have one, and for the other levels mark only those you have graduated from, except university.

   _____ Class B
   _____ Class A
   _____ High School
   _____ Accountant
   _____ Superior Normal
   _____ 1-2 years at the university
   _____ 3 or more years at the university

3. Date when became a teacher _____

   Date when became a secondary schoolteacher _____

4. Mark with an "X" all the subjects in which you participated in the summer training course. Areas of study:

   _____ Humanities
   _____ Science
   _____ English

Section II - Mass Media Use

5. What do you have in your house?

   _____ newspapers
   _____ magazines
   _____ radio
   _____ TV
   _____ books

6. How many hours did you watch TV last week?

_____ none at all
_____ 1-5 hours
_____ 6-10 hours
_____ 10-15 hours
_____ over 15 hours

7. How often did you read the newspapers last week?

_____ not at all
_____ several times
_____ one a day
_____ two a day
_____ three or more a day

8. Which of the following do you consider the most reliable source of national and international news?

_____ radio
_____ TV
_____ newspapers
_____ magazines

9. How often did you go to the movies last month?

_____ not at all
_____ 1 or 2 times
_____ 3 or 4 times
_____ over 4 times

10. Write the titles of the books you have read and that have most interested you during the last six months:

1. _____
2. _____
3. _____
4. _____
5. _____

Section III - Educational Television

11. Students learn more with ETV than without it.

completely agree[1]	agree	I do not know	disagree	completely disagree

[1]All of these questions (11-29) have the same five alternatives.

12. It is more difficult to deal with classroom discipline when using ETV.

_____ _____ _____ _____ _____

13. Classroom teachers improve their methods by watching the teleteacher.

_____ _____ _____ _____ _____

14. It is possible to use common exams for promotion in all schools with ETV.

_____ _____ _____ _____ _____

15. The classroom teacher could teach everything that is taught by ETV if he had the necessary teaching materials.

_____ _____ _____ _____ _____

16. The classroom teacher and the teleteacher are both responsible for the teaching, but in different aspects of it.

_____ _____ _____ _____ _____

17. ETV classes are an obstacle to the interpersonal relations between the classroom teacher and his students.

_____ _____ _____ _____ _____

18. The ETV programs cover too much subject matter for the students.

_____ _____ _____ _____ _____

19. Students learn to study better by themselves when they receive their classes by ETV.

_____ _____ _____ _____ _____

20. ETV programs are not completely clear because the technical equipment is deficient.

_____ _____ _____ _____ _____

21. The talent of the best-trained teachers can be completely shared by schools when they use ETV.

_____ _____ _____ _____ _____

22. ETV programs teach facts, but not concepts because these are difficult to visualize.

_____ _____ _____ _____ _____

23. Classroom teachers learn to organize their schedules better with the ETV system.

_____ _____ _____ _____ _____

24. There is a serious obstacle to learning by ETV because students cannot ask questions until the program has ended.

_____ _____ _____ _____ _____

25. It is possible to teach more with ETV during the year, because ETV can cover more material.

_____ _____ _____ _____ _____

26. Instruction by ETV can make the student more passive in class.

_____ _____ _____ _____ _____

27. The ETV schedule does not allow enough flexibility for the classroom teacher to teach his material.

_____ _____ _____ _____ _____

28. Students are more interested in their classes when they receive them by ETV.

_____ _____ _____ _____ _____

29. ETV will help parents become more interested in the education of their children.

_____ _____ _____ _____ _____

Section IV - Education and the role of the teacher

30. At the present time, what level of education do you consider necessary for the majority of the population?

_____ Primary
_____ Plan Basico
_____ Bachillerato (higher secondary)
_____ Carrera corta (commercial courses)
_____ Superior studies or university
_____ University career
_____ Graduate studies

31. The following is a list of all the programs that have recently been initiated or suggested in the field of education. Please choose <u>three</u> programs which in your opinion are the most important of the Educational Reform.

1. _____ Introduction of the use of educational television
2. _____ Teacher in-service training
3. _____ New program for normal studies
4. _____ New curriculum
5. _____ Change in class schedule
6. _____ Full-time teachers
7. _____ Uniformity in homework assignments and teaching materials
8. _____ Better quality of supervision
9. _____ School construction
10. _____ Establishment of schools with two sessions

BIBLIOGRAPHY

N.B. A list of publications on the present project from the Institute for Communication Research of Stanford University appears on the inside front cover of this report.

Beeby, C. E. The Quality of Education in Developing Countries. Cambridge: Harvard University Press, 1966.

Beeby, C. E. (ed.). Qualitative Aspects of Educational Planning. Paris: Unesco, 1969.

Bruner, J. S., Olver, R. R., and Greenfield, P. M., et al. Studies in Cognitive Growth. New York: Wiley, 1966.

Chu, G. C., and Schramm, W. Learning from Television: What the Research Says. Washington, D. C.: National Association of Educational Broadcasters, 1968.

Commission on Instructional Technology. To Improve Learning: Instructional Technology Report to the President and Congress. Washington, D. C.: Government Printing Office, 1969

Comstock, G., and Maccoby, N. The Peace Corps Educational Television Project in Colombia -- Two Years of Research. Stanford, California: Institute for Communication Research, Stanford University, 1966-67, 12 volumes.

Coombs, P. H. The World Educational Crisis: A Systems Analysis. New York: Oxford University Press, 1968.

Cronbach, L. J. Essentials of Psychological Testing. Third Edition. New York: Harper and Row, 1970.

Lerner, D. The Passing of Traditional Society: Modernizing the Middle East. New York: Free Press, 1958.

Maccoby, E. E. The Development of Sex Differences. Stanford, California: Stanford University Press, 1966.

Ministry of Education, El Salvador. Memoria de las Labores del Ministerio de Educación, 1967-1968. San Salvador, El Salvador: Dirección de Publicaciones, Ministerio de Educación, 1968.

_____ Memoria de las Labores del Ministerio de Educación, 1968-1969. San Salvador, El Salvador: Dirección de Publicaciones, Ministerio de Educación, 1969.

_____ "Programación de actividades del sector educacional, 1968-1972" in Memoria de las labores del Ministerio de Educación, 1968-1969.

_____ ¿Que es la reforma educativa? Sus fines y sus programas. San Salvador, El Salvador: Dirección de Publicaciones, Ministerio de Educatión, 1969.

Schramm, W., Coombs, P. H., Kahnert, F., and Lyle, J. The New Media: Memo to Educational Planners. Paris: Unesco (International Institute for Educational Planning), 1967.

Unesco. New Educational Media in Action: Case Studies for Planners. Paris: Unesco (International Institute for Educational Planners), 1967, 3 volumes.

_____ Unesco Statistical Yearbook, 1968. Paris: Unesco, 1969.

Vernon, P. E. Intelligence and Cultural Environment. London: Methuen, 1969.